THE IRON TRADE REVIEW

Vol. LXIV Cleveland, March 6, 1919 *No. 10*

Market Awaits Meeting's Outcome

General Conference of Producers at New York Holds Attention of Industry—Fate of Redfield Plan Hinges Largely on Decision—Price Shading Continues but is no More Extensive—Iron Output Drops

CALLING together of all iron and steelmakers at New York this week to discuss trade conditions has operated to raise the current expectations of buyers that definite steps toward further price readjustment may be near at hand. Whether such an outcome will be borne out, however, is an open question. Small belief is entertained that any movement toward a lower price plane will be brought about through acceptance of the Redfield stabilizing plan which will be considered. If in reality one of the chief aims of the Redfield proposal is the development of lower prices for the railroad administration, especially, and other government departments, the failure of congress to authorize appropriations greatly weakens the effective possibilities of this plan as a trade stimulant. On the other hand, if this lack of funds results in an early restoration of the railroads to private ownership, the outcome actually may be beneficial from the standpoint of steel buying.

It is broadly intimated at Washington that the outcome of the Redfield plan will depend largely upon whether the iron and steel industry decides to adopt it.

Quick Buying Holds Up

In the face of greater price uncertainties, quick delivery buying in steel products has kept in line with the gradually expanding volume of recent weks, although there has been an immediate pause in some districts until after the meeting of producers this week. The Illinois Steel Co. is able to ship finished material at practically 100 per cent capacity. If these conditions mean anything, they denote the minimum needs of present consumption are of respectable proportions, although not sufficient to provide a satisfactory operating situation generally. Industry plainly shows signs of an impatient inclination to forge ahead. The increased inquiry for shop equipment, though not yet bringing a comparable showing of orders, is a hopeful symptom. The automobile industry still stands out as a conspicuous example of forward motion.

Price softness in various lines of iron and steel has continued but it is hardly more extensive than in other recent periods. Plates, after the recent shading by one producer in the east have shown remarkable resistance. The lighter products still display the most irregularity. Strip steel has been cut sharply in competition for automobile tonnage. Alloy steels have yielded in a similar way. Semi-finished material is subject to further sporadic shading. The great bulk of current business, however, is going at full prices. In this connection, as showing the extent of the labor factor in present costs one large company has computed its labor item on the past year's output at $1.20 per 100 pounds. This figure has represented the full market price of steel at various periods in the past.

Output Cut Sharply

Curtailment of pig iron operations is given numerical expression by the production statistics for February. With the exception of December, 1917, and January and February, 1918, when furnace operations were hopelessly upset by traffic and weather conditions, and also of February, 1917, last month was the first to show an output below 3,000,000 tons since September, 1915. The February total was 2,947,555 tons, as against 3,306,279 tons in January, a loss of 358,724 tons. The number of active stacks at the end of the month was 330, 16 less than January.

Iron Prices Untested

Pig iron prices are subject to the same reports of actual and possible concessions prevalent in other quarters of the market. Actual business is so small, however, that the real strength of the situation is not disclosed. Measures for the uniform settlement of war contracts for iron now requiring adjustment have been put in motion by the ordnance department. A Pittsburgh district steelmaker has disposed of 10,000 tons of resale basic at $28.50 to $30, furnace.

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IN THIS ISSUE

PAGE

IRON AND STEEL MARKET REVIEW 607
EDITORIALS 608, 609
IRON AND STEEL PRICES 610, 674
INDEX TO MARKET REPORTS 610
IRON AND STEEL MARKETS 611
MALLEABLE PLANT PROVES VERSATILITY 623
Designed and Constructed for One of the World's Largest Malleable Foundries. This Great Establishment Adapted Without a Jar to the Successful Manufacture of Cast-Steel Anchor Chain.
A FEW OF GERMANY'S TECHNICAL PLANS 630
GAGE TESTING PLANS ARE FAR REACHING 632
ENGINE LATHES FOR PRECISION WORK 633
A Description of How Various Lathe Parts in the Process of Making Are Routed Through the Grinding, Planing, Milling, Turning and Assembling Departments at a Machine Tool Plant in Cincinnati.
BRITISH STRIKES SET BACK IRON TRADE 640
VALLEY PLANT PRODUCES OWN STEEL 641
Complete Steel-Making and Semifinishing Capacity Places Finishing Mills on a Self-Contained Basis—Blooming Mill Manipulators Are Unique—Safety Features Have Been Given Full Consideration—Description of Plant.
1918 LAKE SUPERIOR ORE SHIPMENTS 646
EMPLOYMENT SERVICE TO BE OUSTED 650
ANNOUNCE NEW OCEAN FREIGHT RATES 653
EXTEND TIME LIMIT ON TAX RETURNS 660
FEBRUARY BRINGS MUCH TOOL TRADING 665

Speed the War Payment

PRESIDENT WILSON'S signature of the bill to invalidate informal war contracts, opening the way for a further resumption of industrial activity, a return to normal business or the starting of new lines of manufacture, promises to exert its good effects nowhere more plainly than in the machine tool and equipment industry.

No accurate estimates are obtainable as to amount of money tied up in the machine tool industry by these informal contracts but it is generally conceded that it is large. Not alone are the equipment manufacturers directly interested but indirectly through subcontractors and other large users of tools who have been operating on government work.

Shortly after the cancellation orgy which hit those trades, following Germany's capitulation, complaints were heard on all sides relative to the slowness of federal authorities in getting around to the consideration of the many contracts placed by telegraph, telephone and word of mouth which never were followed by confirmations. These complaints have increased in number and in intensity since the days have rolled into weeks and the weeks into practically four months. They were inspired by the feeling on the part of the manufacturers that they patriotically had answered the nation's call for help in its wartime extremity and with the crisis safely passed, they were unable to lay their hands on the capital they had tied up. In the interval not a few failures, bankruptcies and receiverships have resulted. This has been detrimental to the sale of machine tools and equipment.

These complaints now should not be succeeded by others, namely, complaints about delays in settlement of claims. One prominent midwestern tool dealer expressed himself as follows: "Yes, the bill has been signed. That does not mean however, that these bills are to be paid tomorrow. The usual delays will ensue; the usual governmental red tape will have to be unwound. Perhaps sometime in the indefinite future, these contractors will receive their money."

It is to be hoped that this is an over-pessimistic view. Everything should be done to expedite the payment of these bills. Nothing should be allowed to interfere. Adjustments are necessary as are investigations of fraud charges, but this law should be allowed to function immediately and fully in every case possible. No red tape should be permitted to militate further against the closing up of these contracts. The sooner they are cleaned up, the sooner will these manufacturers know where they are at and the sooner will industry in general and the machine tool industry in particular resume its functions of prewar days. Herein lies the government's opportunity to show its appreciation of the way manufacturers rallied to its support. Industry wants no medals but it does want its bills paid. When they are paid, unless all signs fail, an impetus will be given to the manufacture of machine tools which will do more than anything else to place that key industry upon a basis which will resemble the active days which preceded the signing of the armistice than anything which has been suggested so far to effect that result.

War Teaches Practical Lesson

ENFORCED changes in routine and practice as a result of limitations set by the war have taught some lessons of value and have brought about permanent variations from the standards of former days. One of these has appeared in the pig iron and foundry industry and promises to be of value to the melter as well as the producer of pig iron. It relates to the silicon content in pig iron.

Inasmuch as more coke is consumed in the production of higher silicons and the resulting tonnage is smaller than for standard irons it became the practice of blast furnaces during the war to limit silicon in the interest of the largest possible output. As a result foundries were compelled to

change their practice and get along with less silicon. This was done with more or less success, according to the adaptability of the founder. In many instances the surprising discovery was made that just as good castings could be made with much less silicon in the mixture and the cost was reduced.

Following the war, with conditions on a different basis, but silicon remaining a comparatively expensive element, many advanced foundrymen have profited from their war experience and are maintaining their mixtures on the wartime basis. Furnaces equally are pleased since they prefer to produce the lower silicon grades as the cost of running up silicon is considered out of proportion to the return.

The hope now is being expressed by both producers and consumers that this lesson taught by the war may extend throughout the foundry industry and result in a new standard of requirements in this respect, to the common benefit of the entire iron trade.

Readjustment and a Free Market

OF all the nonferrous metal industries, the lead trade stands alone as having passed successfully through the period of transition from war to peace conditions. It has experienced a slackening of demand almost to a minimum; a decline in prices to rockbottom; a curtailment in production to between 50 and 60 per cent of normal output; and finally an improved demand with an upturn in prices. All this has taken place since Dec. 20, when the lead market was declared free from all restraint. Government stocks of lead amount only to a few thousand tons not sufficient to affect the market. On Nov. 11, when the armistice was signed, the price of pig lead was 8.05c, New York. The price dropped steadily until a few weeks ago it reached 5c, New York, when demand was stimulated. Since then the market has advanced to 5.25c, New York and demand still is good. The average prewar price was about 4.50c, but the current selling price still is below the average current cost of production, authorities in the lead trade state.

The lesson to be derived from the lead situation grows out of the fact that lead was not controlled, during the war, in quite the same manner as steel, copper and other commodities. The government, it is true, maintained strict supervision of the lead trade but there was no formal control. The lead producers themselves guaranteed the amount of lead required for war purposes at a fair price, and they kept their promise. Through the lead producers war service committee nonessential production of lead was eliminated and distribution of the insufficient supply effected as required. But in December, when the committee saw unsold stocks accumulating, and having no authority to continue after Jan. 1, it declared the market free as of Dec. 21. The readjustment immediately was entered into. While it was drastic, the lead market is in a far healthier state today than are the markets for many other commodities. Perhaps general business would be in a stronger position right now if business leaders in other industries had been given equal opportunity to meet war conditions, with government supervision rather than control.

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IT has taken three months of vacillation for congress finally to sustain the good faith of the government by enacting the bill to validate informal war contracts. Hundreds of companies now are enabled to collect just compensation for services faithfully rendered since the President has lost no time in affixing his signature to the validating measure. Thereby many plants are relieved of financial embarrassment if not threatened insolvency because they, acting in good faith, had tied up a considerable portion of their liquid resources when they gave heed to the government's urgent calls under stress of war and put production ahead of formalities.

The delay in the enactment of the war contracts bill does not allow a single shred of excuse. While congress and the government have been making loud and somewhat spectacular proposals of doubtful efficacy to get industry out of the rut, they have by the policy of procrastination and failure to pay overdue war bills kept industry in check. It is doubtful whether any single conditions or factor arising out of the war has had a more repressing effect on industry than its inability to collect for work performed and thereby be able to finance further operations. This has been especially true with regard to many subcontractors.

The blame lies wholly with congress and more with the senate than the house since the latter at all times has shown a fairer and more appreciative attitude of the plight into which the patriotic efforts of many companies unwittingly had led them. The war department at all times has urged that quick justice be done to the war contractors both direct and indirect.

The whole case is a sad commentary not so much upon national gratitude as upon the cumbersome, dragged-out methods of congressional procedure. If industry is looking in that direction for any aid as guidance in the present business situation, it is a lost hope. Congress is only now catching up with the business of war, let alone with the more statesmanlike demands of a new peace.

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Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE AND IRON ORE PRICES ON PAGE 674

Pig Iron

Bessemer, valley	$32.20
Bessemer, Pittsburgh	33.60
Basic, Pittsburgh	31.40
Basic, valley	30.00
Basic, delivered eastern Pa.	33.90
Basic, Buffalo, furnace	30.00
Malleable, Pittsburgh	32.90
Malleable, Chicago, furnace	31.50
Malleable, Buffalo, furnace	31.50
Malleable, delivered eastern Pa.	35.40

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern	2.25 to 2.75
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 plain eastern	1.75 to 2.25
No. 1X, eastern delivered Phila.	37.90
No. 2, valley, Pittsburgh	32.40
No. 2 foundry, Cleveland furnace	31.00
No. 2 foundry, Ironton furnace	31.00
No. 1 foundry, Chicago furnace	32.25
No. 2 foundry, Chicago furnace	31.00
No. 2X, eastern del., Phila.	36.15
No. 2X, eastern, N. J. tidewater	35.25
No. 2X foundry, Buffalo furnace	32.25
No. 2 plain, del. Philadelphia	34.90
No. 2 plain, N. J. tidewater	34.00
No. 2 southern, Birmingham	32.25
No. 2 southern, Cincinnati	35.85
No. 2 southern, Chicago	37.25
No. 2 southern, Phila.	38.75
No. 2 southern, Cleveland	37.25
No. 2 southern, Boston	40.25
No. 2 southern, St. Louis	35.40
Virginia, No. 2X, furnace	32.25
Virginia, No. 2X, Phila.	36.35
Virginia, No. 2X, Jersey City	36.65
Virginia, No. 2X, Boston	36.95
Gray Forge, valley, Pittsburgh	30.40
Gray Forge, eastern Pa.	35.90
Silvers, 8%, furnace	44.50
Ohio Silvers, 8%, Chicago	47.80
Tennessee Silvers, 8%, Chicago	48.50
Low phos. standard, Phila.	51.00
Low phos. Lebanon, furnace	48.00 to 50.00
Low phos. standard, Pittsburgh	51.40
Charcoal, Superior, Chicago	38.70

Coke

(At the ovens)

Connellsville furnace	$4.00 to 5.00
Connellsville foundry	5.00 to 6.00
Pocahontas furnace	8.00
Pocahontas foundry	8.00
New River foundry	8.00
New River furnace	8.00
Wise county furnace	7.25
Wise county foundry	8.25

Ferroalloys

Ferromanganese, 80 per cent delivered	$150.00
Spiegel, 10 to 20 per cent furnace, spot	45.00 to 50.00
Ferrosilicon, 50 per cent, spot and contract, delivered	125.00 to 135.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer ferrosilicon, 10 per cent	54.00
Bessemer, ferrosilicon, 11 per cent	57.30
Bessemer, ferrosilicon, 12 per cent	60.30

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

Open-hearth, Pittsburgh	$43.50
Open-hearth, Philadelphia	47.50
Open-hearth, Youngstown	43.50
Bessemer, Pittsburgh	43.50
Bessemer, Youngstown	43.50
Forging, Pittsburgh	56.00
Forging, Philadelphia	60.00

SHEET BARS

Open-hearth, Pittsburgh	$47.00
Open-hearth, Youngstown	47.00
Bessemer, Pittsburgh	47.00
Bessemer, Youngstown	47.00

SLABS

Pittsburgh and Youngstown	$46.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$57.00
Grooved skelp, Pittsburgh	2.70c
Sheared skelp, Pittsburgh	3.00c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pitts.	2.80c
Structural shapes, Phila.	3.045c
Structural shapes, N. Y.	3.07c
Structural shapes, Chgo.	3.07c
Tank plates, Chicago	3.27c
Tank plates, Pittsburgh	3.00c
Tank plates, Philadelphia	3.245c
Tank plates, New York	3.27c
Bars, soft steel, Pittsburgh	2.70c
Bars, soft steel, Chicago	2.97c
Bars, soft steel, New York	2.97c
Bars soft steel, Phila.	2.945c
Bar iron, common, Phila.	3.145c
Bar iron, common, Chicago	2.92c
Bar iron, common, Cleveland	3.17c
Bar iron, common, New York	3.17c
Bar iron, common, Pittsburgh	3.10c
Bar iron, refined, Pittsburgh	5.00c
Hard steel bars, Chicago	2.80c

Rails, Track Material

Standard bessemer rails, mill	$55.00
Stand. open-hearth rails, mill	57.00
Relaying rails, light, St. L.	40.00 to 45.00
Angle bars, Pittsburgh base	3.00c
Angle bars, Chicago base	3.00c
Light rails, 25 to 45, mill	2.75c
Spikes, railroad, Pitts.	3.65c
Track bolts, Pittsburgh	4.90c
Track bolts, Chicago	4.92c
Track spikes, Chicago	3.92c
Tie plates, Chicago	3.00c

Wire Products

(Per 100 lbs. to jobbers: retailers 5c more)

Wire nails, Pittsburgh	$3.50
Plain wire, Pittsburgh	3.25
Galvanized wire, Pittsburgh	3.95
Barb wire, painted, Pitts.	3.65
Barb wire, galvanized, Pitts.	4.35
Cut nails, Pittsburgh	5.00
Coated nails per count keg, Pitts.	3.40
Polished staples, Pittsburgh	3.65
Galvanized staples, Pittsburgh	4.35

Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	7.50c
Sheet piling, base, Pitts.	4.00c to 5.00c

Cold rolled strip steel, hard coils, 1⅛ inches and wider by 0.100 inch and heavier, base per 100 pounds, 6.25c.

Market Report Index

	PAGE
Weekly Market Review	607
Pig Iron	611
Coke	613
Wire	613
Scrap	614
Merchant and Cast Iron Pipe	615
Sheets	615
Bars	616
Nuts, Bolts and Rivets	616
Semifinished Steel	616
Cars and Track Materials	617
Ferroalloys	617
Plates	618
Structural Shapes	618
Nonferrous Markets	622
Refractories	661
Coke By-Products	663
Machine Tools	666

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.70c
No. 28, bessemer, Pitts.	4.70c
No. 28, open-hearth, Chi.	4.97c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.70c
No. 28, bessemer, Pitts.	4.70c

GALVANIZED

No. 28, open-hearth, Pitts.	6.05c
No. 28, bessemer, Pitts.	6.05c
No. 28, open-hearth, Chi.	6.32c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.90c
No. 10, bessemer, Pitts.	3.90c
No. 10, open-hearth, Chi.	4.17c
No. 10, open-hearth, Phila.	4.145c

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.35

Iron and Steel Pipe

Base Pittsburgh

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
⅜ to 3 in., butt, steel	54	40½
⅜ to 3 in., butt, iron	36	20

Boiler Tubes

Steel, 2½ to 4½ inches, l. w. l.	33
Iron, 2½ to 4½ inches, c. l.	12½

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $1 higher than Class B.

Four-inch, Chicago	$64.80
Six-inch and over, Chicago	61.80
Four inch, New York	65.70
Six-inch and over, N. Y.	62.70
Four-inch, Birmingham	58.00
Six-inch and over, Birmingham	55.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.30c
Bands, Pittsburgh	3.30c
Hot rolled strip steel, Pitts. stamping quality	3.30c to 3.80c
Shafting, Pitts., carloads	21 off to list
Cotton ties, per bundle	nominal

Rivets

Structural rivets, Pittsburgh	4.20c to 4.40c
Boiler rivets, Pittsburgh	4.30c to 4.50c

Rivets ⅞ in. and smaller Pittsburgh, 50-10 off to 50-10-10 off.

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50–5 off
Cut thread	40–10–5 off
Larger and longer	40 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	50–10–5 off
Cut thread	50–5 off
Larger and longer	40–10 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	60–10–10 off
Cold pressed semifinished hexagon nuts ½ in. and smaller	70–5 off
Gimlet and cone point lag screws	50–10 off

NUTS

Hot pressed, square blank	2.50c off
Hot pressed, square tapped	2.30c off
Hot pressed, hexagon blank	2.30c off
Hot pressed, hexagon tapped	2.10c off
Cold pressed, square blank	2.25c off
Cold pressed, square tapped	2.00c off
Cold pressed, hexagon blank	2.25c off
Cold pressed, hexagon tapped	2.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Quotations on leading products March 5, average for February, 1919, average for December, 1918, and average March, 1918. Prices are those ruling in the largest percentage of sales at the dates named.

	Price Mar. 5, 1919	Average prices Feb., 1919	Dec., 1918	Mar., 1918
Bessemer, valley del., Pittsburgh	$33.60	$33.60	$36.60	$37.25
Basic, valley del., Pittsburgh	31.40	31.40	34.40	33.95
*No. 2 Foundry, Pittsburgh	32.40	32.40	35.40	33.95
*No. 2 Foundry, Chicago, furnace	31.00	31.00	34.00	33.00
Lake Superior charcoal, Chicago	38.70	38.70	38.70	37.50
Malleable, valley	31.50	32.90	35.90	34.45
Malleable, Chicago	31.50	31.50	34.50	33.50
**Southern, No. 2, Birmingham	32.25	32.25	35.25	33.50
*Southern Ohio, No. 2, Ironton	31.00	31.00	34.00	33.00
Basic, eastern del., eastern Pa.	33.90	33.90	36.90	33.00
**No. 2X Virginia, furnace	32.00	33.00	38.00	33.50
**No. 2X, eastern del., Philadelphia	36.15	36.15	39.15	34.25
Ferromanganese, 80 per cent, delivered	150.00	187.25	235.50	250.00
Bessemer billets, Pittsburgh	43.50	43.50	47.50	47.50
Bessemer sheet bars, Pittsburgh	47.00	47.00	51.00	51.00
Open-hearth sheet bars, Pittsburgh	47.00	47.00	51.00	51.00
Open-hearth billets, Pittsburgh	43.50	43.50	47.50	47.50
Steel bars, Pittsburgh	2.70	2.70	2.90	2.90
Steel bars, Chicago	2.97	2.97	3.17	2.90
Iron bars, Philadelphia	3.145	3.295	3.745	3.50
Iron bars, Cleveland	$3.25	3.25	3.64	3.64
Iron bars, Chicago mill	2.92	2.95	3.50	3.50
Beams, Chicago	3.07	3.07	3.27	3.00
Beams, Pittsburgh	2.80	2.80	3.00	3.00
Beams, Philadelphia	3.045	3.045	3.245	3.185
Tank plates, Pittsburgh	3.00	3.00	3.25	3.25
Tank plates, Chicago	3.27	3.27	3.52	3.25
Tank plates, Philadelphia	3.245	3.245	3.495	3.435
Sheets, blk., No. 28, Pittsburgh	4.70	4.70	5.00	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.90	3.90	4.25	4.25
Sheets, galv., No. 28, Pittsburgh	6.05	6.05	6.25	6.25
Wire nails, Pittsburgh	3.50	3.50	3.50	3.50
Connellsville furnace coke	4.25	4.125	6.00	6.00
Connellsville foundry coke	5.00	5.125	7.00	7.00
Heavy melting steel, Pittsburgh	15.00	16.00	27.50	30.00
Heavy melting steel, eastern Pa.	14.00	15.25	24.75	29.50
Heavy melting steel, Chicago	14.50	14.90	26.50	30.00
No. 1 wrought, eastern Pa.	21.50	25.00	33.50	35.00
No. 1 wrought, Chicago	17.50	16.65	29.65	35.00
Rerolling rails, Chicago	16.50	15.50	30.40	35.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

(FOR ADDITIONAL PRICES SEE PAGE 674.)

Pig Iron Sales Remain at Minimum

Scarcely Sufficient Tonnage is Being Closed to Test Prices—Various Reports of Actual and Possible Concessions in Circulation—Domestic and Export Inquiries Now Are Largely "Feelers"—Shipments Better in Some Districts

Pittsburgh, March 4.—Although pig iron prices cannot be quoted lower this is chiefly because of the absence of sales of quotation-making tonnages. While a few good-sized inquiries have been before producers during the past week or so, they have not had the appearance of being anything more than "feelers," and consequently have not received much attention. One of these was for 10,000 tons of southern basic for April and May delivery for export. It was put out by the Oil Well Supply Co., Pittsburgh, and called for f.a.s. bids at New York or New Orleans. As far as can be learned nobody here has quoted against this business. Another export inquiry involving 5000 tons of bessemer also has been out recently, but failure on the part of those seeking the tonnage to find producers willing to shade $32.20, valley furnace, has resulted in the shelving of the inquiry. What looks like the one real inquiry of any considerable size that is before the trade is one for 1500 tons of No. 2 foundry, for second quarter delivery, put out by the Standard Sanitary Mfg. Co. for its Louisville plant. This inquiry still is open but it is likely to go to southern furnaces. The bulk of current inquiries is for small tonnages and of these the great majority are for foundry iron. Not only is the current demand for steelmaking grades extremely limited but deliveries against contracts are light. One important producer reports the receipt of shipping instructions on only 50 per cent of its orders. The sale of a small tonnage of No. 2X foundry to a Pittsburgh district consumer is noted at $32.25, valley furnace, and the Union Radiator Co., Johnstown, Pa., has closed for between 200 and 300 tons No. 2 foundry. This latter deal was made at a slight concession from the regular market quotation, probably not to exceed $1, but actual details are withheld. It is learned that the sale was made through a broker, but whether resale or furnace iron figured is not clear. As far as prices are concerned, it must be said that while quotations remain unchanged the tone of the market is easier. It is known that producers of foundry iron are prepared to make concessions to move some of their tonnages which have accumulated in their yards and increased talk is heard that prices of steelmaking grades would be made more attractive with the appearance of what looks like a real inquiry. In a market such as the present one, with buyers either entirely disinterested or asking only small tonnages to meet immediate and pressing needs, no real line on actual selling values can be obtained. The monthly average of prices of sales of basic and bessemer pig iron of 1000 tons or more by valley producers as compiled by W. P. Snyder & Co., shows a February average to have been $32.20 for bessemer and $30 for basic, the same prices as for the previous month.

Concessions Are Indicated

New York, March 3.—Although rumors of price shading continue to be circulated in the pig iron market, there are no details to authenticate them. However, while the present market level as a rule is being maintained, it is regarded as certain that at least some producers are willing to grant concessions should real orders be offered. Present business is comprised largely of small tonnages, principally carload lots, and there is a lack of real orders of a size that would induce departures from the present price level. At the same time, producers realize that the present price situation is too abnormal to be continued indefinitely. Makers in the Juniata valley, for instance, who take freight rates of $3.10 to $3.60 to New York and Brooklyn, are able, because of the present method of quoting, to take business in the metropolitan district away from eastern Pennsylvania furnaces, owing to the fact that the latter are quoting the Pittsburgh freight rate. The question as to how soon the market will decline, there-

fore, depends entirely on the length of time that still must elapse before the furnaces become sufficiently hungry for business. Quite a few inquiries constantly are coming out but by far the greater number of them seem to be merely market feelers. While large export inquiries continue in the market and large future buying from abroad continues to be talked of, actual export business placed during the past week again was small. Such sales reported comprise only a few small lots. Some foundry iron has been piled at furnaces lately, but it is not sufficient to influence the present situation. The iron which has been piled usually involves small tonnages of high silicon and off-grade metal, which during the war could have been disposed of with ease but which now is hard to move. The fact that it is difficult to buy cast scrap at the low prices which have been quoted lately, prevents sales of high silicon iron from being as large as they otherwise would be.

Some Shading is Noted

Philadelphia, March 4.—Shading of pig iron prices became a reality in this district the past week. Furnaces in the Pittsburgh and valley districts have offered foundry iron at material concessions and small sales chiefly by brokers have resulted at prices equivalent to $29 and $30 Pittsburgh for No. 2 plain. This is $1 to $2 below the market and indications are that considerable iron can be had at these figures. The situation on eastern iron is unchanged. Eastern furnaces generally continue to observe the $31 Pittsburgh base and exceptions to this rule seem few. Among the latter is a continuance of offerings by the Reading Iron Co. at $32.50 for No. 2 plain and $33 furnace for No. 2X. Reports continue to be heard that other eastern furnaces are shading occasionally but investigations seem to indicate that these have no foundation. The belief prevails, however, that few furnaces would refuse to shade should attractive tonnages be at stake. There is so little business offered that the market is not thoroughly tested. In fact, current demand is even smaller than in preceding weeks and it is made up almost entirely of carlots for immediate use. Consumers more than ever are holding off in the expectation of lower prices. Virginia iron now may be had at a lower silicon differential or $31 funace for No. 2 plain, $32 for No. 2X and $33 for No. 1X. Activity in basic is entirely lacking and low phosphorus sales are restricted to a few cars. Sales of standard iron have been made at full prices. Resale offers of bessemer, malleable and charcoal, have failed to attract any buyers.

Buffalo Holds Prices Firmly

Buffalo, March 4.—Current specifications on old orders are monopolizing the time of furnace interests here now. Inquiry and new business is practically dead. One heavy producing interest here which normally numbers its inquiry and placement by thousands of tons reports that during the past week it closed but 200 tons of new iron. This was foundry grades. No furnace interest is piling iron and it isn't likely that any will. Furnacemen, it may be stated positively, are holding strongly to prices in this district and there is no thought of shading. It is not believed that shading would stimulate the present market anyhow. The interests are awaiting developments in the so-called stabilization plan which is expected to be announced within the week.

Shipments Are Better

Cleveland, March 4.—Some favorable examples of shipping activities in pig iron continue to be presented from this territory. One of the largest producers shipped his entire output during the month of March amounting to something like 70,000 tons. There is increasing activity among producers of automobile castings. Cylinder manufacturers in some cases have asked for anticipation within the next 30 days of the tonnage originally bought for delivery up to July 1. Some local foundries have considerably increased their weekly specifications over a month or two back. As a result of this better movement the piling of iron has not increased and if anything is not quite as extensive. Some producers nevertheless continue to figure on putting out some stacks for repairs and relining during the next few days. New business, however, is extremely quiet and sales only are a matter of a few hundred tons. Inquiries likewise are few and small. Disposition of some of the larger lots which were reported pending last week has not been learned but it is doubted whether a large tonnage in any case has been closed. There is a more active buying of silveries in small lots which indicates that consumers are taking greater advantage of the low cast scrap prices and are using this grade of iron as a sweetener. Some reports of price shading are current, but it has not been developed that these amount to more than an effort of certain producers to equalize freights and bring their quotations on the same basis as $31 at the furnace nearest to destination.

Chicago Blows Out Stacks

Chicago, March 4.—After holding to full production long after many other fields had begun to blow out its stacks, the Chicago district has begun to feel the effect of market conditions and three stacks of the Iroquois Iron Co., at South Chicago, are now cold. One of these has been busy on spiegeleisen and ferromanganese and is being relined. The second is one of the older stacks of small capacity and probably high cost, while the third idle stack is of larger capacity. This leaves two large stacks in blast at this plant. It is understood one stack in Wisconsin probably will be blown out during second quarter unless market conditions change markedly. Word has been received by representatives of an Ohio maker of silveries that it probably will blow out before the middle of the year, unless demand picks up. Demand for iron is confined to carlots and small tonnages for immediate delivery, and no general buying has appeared. Some high manganese and high silicon iron from a steel stack in this district is finding ready market, lots as high as 600 tons having been disposed of recently. Some small tonnages of resale iron are being handled by brokers at the market but this is not sufficient to have an effect on the general situation. Most furnaces are piling some iron, which they expect to move a little later in the year. Melters generally seem to have the idea that they should dispose of iron they now have on contract or actually in their yards before taking on further tonnages and there is always in the background the idea that prices may decline. However, most foundrymen are not anxious to see prices go off to a marked degree inasmuch as most of them have sufficient iron already bought to carry them well past the middle of the year on the basis of present consumption.

Will Blow Out Before Cutting Price

Cincinnati, March 3.—About the only development of interest during the past week is the rumored intention of southern furnaces to blow out before reducing prices. Sales of southern iron are now so limited that as contracts in hand begin to expire the furnaces will be compelled to commence piling iron, which they are unwilling to do at present production costs. Foundries have more iron piled than they can use for some time at the present rate of consumption. No credence is placed in rumors that furnaces located farther east have made reductions. The principal reason for rejecting such reports is the general belief that prices will not bring out any business now. It is admitted that the present very low price of scrap is a factor that reduces sales of prompt iron considerably, as scrap is being substituted wherever possible in different mixtures. However, some foundries are said to be using the usual percentage of pig iron in order to clean up their stocks as much as possible.

St. Louis Market Remains Dull

St. Louis, March 1.—No signs of an awakening have come to the fore in the pig iron situation during the last few days. Actual transactions have been confined to a few small lots of foundry grades to fill in and several scattering cars of specialties. Consumers refuse to become interested, and are waiting until their customers resume buying. Present prices are not sufficiently low to attract speculation and melters are content to abide their time and purchase when they have business upon which to apply the iron. Contracts are moving along at a fair rate, especially tonnages from the south. Requests for delayed shipments are exceedingly few. While this is a hopeful factor, it is offset by the total absence of new business. The cut in prices has failed to stimulate interest and it is stated that the price is of less importance than the fact that ultimate consumption seems to have stopped. The policy of closing down by both first and second hands, especially where the demand is particularly dull, is growing more popular, no one caring to accumulate at the present level of values. Members of the trade in this district are unwilling to express opinions relative to the future. All agree, however, that things are about as dull as they ever get and no sudden return to life is looked for by even the most optimis-

tic. The plant of the American Steel Foundries in East St. Louis has closed down, and other plants are curtailing their operations to a minimum. Many stove foundries have closed down or have cut production.

More Furnaces to be Blown Out

Birmingham, Ala., March 4.—Three furnaces are to be blown out soon, and a steady reduction of pig iron in Alabama is indicated as long as present conditions prevail. At present cost of production, furnace companies believe it is unwise to accumulate iron, and for that reason furnaces are being shut down. Few inquiries are being received but sales amount to little. Purchase recently of 600 or 700 tons, the last of the output of a furnace which was shut down a few weeks ago, at a price below $27 is not to be considered significant as to future prices. The purchase was made by a cast iron pipe company and is only a small part of an annual melt. Little optimism is expressed by pig iron manufacturers.

No Improvement

Shown in Wire Situation — Price Doubts Restraining Buying

Pittsburgh, March 4.—Demand for wire products still drags, as jobbers remain unconvinced that current prices will hold and consequently are buying only in such quantities as will carry them along over a short period. Export inquiries continue to come out for nails and one Pittsburgh company recently booked 2000 kegs for shipment abroad. Little export business is doing in other wire products. Export prices for wire products still are at a premium over domestic quotations, nails selling on a basis of $4.70 per keg, New York, or $4.43, Pittsburgh.

Demand is Good

Buffalo, March 4.—There is a good demand for wire products, local mills report. Wire nails, staples and tacks are being inquired for in good volume.

Nearby Buying Continues

Cleveland, March 4.—There is virtually no change in the wire situation and purchases of consumers still are confined to absolute needs. This represents the case both with jobbers and the manufacturing trade. While the miscellaneous tonnage is considerable, doubt is expressed by leading producers that it will be sufficient to maintain present operations for any indefinite time. Some of the independent mills, however, report that they are in a fair position on tonnage and are filled up for several months.

More Demand in South

Birmingham, Ala., March 4.—Steel mill operations in this district show but little improvement. Wire, nails and barbed wire, however, are needed in quantity. The Gulf States Steel Co. is making preparations to run its finishing departments on both day and night turns. No export business is looked for until ocean freight rates are reduced.

March Coke Needs Covered

Considerable Tonnage Closed by Furnace Interests at $4 to $4.25—Second Grade Offered Lower—Makers Revise Foundry Contracts

Pittsburgh, March 4.—Closing days of February saw something of a flurry by blast furnace interests to cover March requirements. These needs met, trading has lapsed back into dullness, with the market somewhat irregular as to prices. Thus, while the larger interests who are in a position to keep production well within the scope of consumption, are holding out quite firmly for $4.50, ovens, for standard furnace and have succeeded in doing some March business on that basis, the smaller producers who must either run 100 per cent or go out entirely, have been more at the mercy of buyers in moving their production. These latter interests have not succeeded in doing better than $4.25, ovens, and in a market so restricted as the present one, they rather than the larger producers are making the prices. As far as actual March business is concerned, $4.25, ovens, seems to have been the more general price for choice brands of standard furnace. Two orders are known to have been closed at this figure. Sale of a round lot of about 5000 tons of what is rated as a fairly good brand of furnace coke is noted at $4, ovens, and it is reported that brokers have offered tonnages, probably second grade, at $3.85, which includes the commission of 10 cents a ton, making the oven price to shippers $3.75. In a broad way, the spot or prompt market may be quoted at $4 to $4.50 on the better offerings of furnace coke, with contracted supplies going at $5. Little foundry coke is moving at higher than $6, as government prices contracts calling for $7, have been scaled quite generally to $6, while the spot market is right around $5 on this grade, with little business doing. According to *The Connellsville Courier* Connellsville production of coke for the week ended Feb. 22, was 233,612 tons, against 200,356 tons in the previous week.

Contract Deliveries Reduced

New York, March 3.—When Connellsville coke makers as of March 1, reduced by one delivery of foundry coke on contracts during March, New England by-product makers followed suit. Both the New England Coal and Coke Co. and the Providence Gas Co. have decided to bill all foundry coke contract shipments during March at same as Connellsville makers as at $6.00, Connellsville ovens, equivalent to $10.40, delivered New England. This is $1 less than during February. Seaboard By-Product Coke Co. has unchanged price of $6.50, Connellsville, which applied to contract and new business. This is equivalent to $9.60, delivered Newark and other New Jersey points, as freight rate Connellsville to most New Jersey points is $3.10.

Practically No Inquiry for Coke

Cincinnati, March 3.—The hesitancy on the part of Wise County and New River producers to change formal quotations can be well understood when it is explained that there is practically no inquiry for coke. A few buyers that generally draw from the Connellsville field have bought sufficient fuel recently to carry them through the next 60 days, but this period about represents the limit for future purchases. Connellsville coke is weak and furnace grades for prompt delivery have been bought at $4 to $4.25 per ton, ovens. Foundry coke is quoted as low as $5.50, but most makers are asking $6 to $6.25. Some Wise County furnace coke could be purchased at $7, and foundry around $8. New River producers are still maintaining a nominal quotation of $8 on either furnace or foundry grades.

More Inquiries at St. Louis

St. Louis, March 1.—During the past few days there have been a few more inquiries for foundry coke than noted of late, which fact leads to the belief that conditions are about to improve. All grades of coke are plentiful and easy to get, and selling agencies report unwillingness on the part of consumers to contract for future supplies. The belief prevails that prices are still too high. Generally weather conditions have been ideal for the movement in all directions and deliveries are at 100 per cent in a majority of cases. Melters in this district are accumulating to some extent, reduced operations at the plants leaving surpluses. Quite a number of ovens, both by-product and beehive, are lowering their prices to present levels for customers with contracts at higher rates. Coke on the contracts involved was purchased for war work, which having terminated, leaves the consumer with high-priced fuel on his hands. This concession is part of a general campaign for new business.

Nonproducing Coke

The Providence Gas Co., Providence, R. I., advises that its new coke oven plant began to produce coke Feb. 5. The daily carbonizing capacity is 750 tons of coal, from which it is estimated 500 tons of coke will be secured. A mixture of high and low volatile coal will be used and each oven will take a charge of 11.4 tons. It is proposed to run the ovens at a temperature of 2100 degrees Fahr. and take drawings every 16 hours. The plant, which consists of one battery of 40 ovens of the cross, regenerative, combination type, was constructed by the Koppers Co., Pittsburgh, and is designed to operate with coal gas, producer gas, or both. The ovens are 40 feet long, 10 feet high, and 15¼ inches wide. The Providence Gas Co. intends to specialize in the production of foundry coke and to guarantee sulphur and ash contents under 1 per cent and 10 per cent, respectively. W. G. Rich, general sales agent of the company will handle production.

Scrap Shows Upward Turn

Chicago Market, for First Time Since War, Develops Sales at Advances—Better Tone at Cleveland, New York and Elsewhere

FOR COMPLETE SCRAP PRICES SEE PAGE 674

Chicago, March 4.—For the first time since the end of the war a general upward tendency is noticeable in iron and steel scrap. At a few times previously one or two items have shown an upward trend, due to local conditions, but during the past few days a decidedly upward movement has shown itself in about half the list. This increase varies from 50 cents to $2 per ton and covers a wide variety of grades. A large consumer of wrought scrap and busheling was in the market last week and is understood to have taken several thousand tons of these grades. The market was in a balanced position and this buying seems to have been enough of a push to start it on an up grade. Consumers are not buying much but dealers feel so certain of their position they are all paying higher prices for the grades which show the increase. The Michigan Central railroad has issued an open list covering a dozen or more grades. The Chicago & North Western offers 6600 tons, including 750 tons of steel rails, 350 tons of No. 1 wrought and 500 tons of mixed wrought and steel scrap.

Fair Demand in New York

New York, March 3.—Some fair buying of heavy melting steel has been done in this market during the past few days, although no particularly large tonnages have been involved. There also has been a fair demand for mixed borings and turnings, which has resulted in slightly stronger prices, dealers now offering to buy at $7 to $7.50, and some sales of cast scrap are noted. This latter material, however, is being bought in small lots, indicating that foundries in this district are confining their purchases to their immediate requirements. With the exception of mixed borings and turnings, all grades in the New York market are nominally unchanged.

Below Ten Year Average

Philadelphia, March 4.—Heavy melting steel has sagged further in the eastern Pennsylvania district and now is quoted from $13.50 to $14.50, delivered. This level is about 20 cents below the average over the 10 years prior to the war. It is known that only limited tonnages can be bought at this level, and any considerable buying would quickly restore prices to the basis of a week ago. Rerolling rails and wrought pipe have also declined. Both are quoted at from $16 to $17, delivered. Ungraded wrought pipe is at $11 to $12. The past week was featured by considerable buying of blast furnace borings and turnings and heavy melting steel by brokers to fill contracts. Dealers now are firmly predicting that the unusual spectacle of ascending prices simultaneously with a declining steel market will be seen shortly. The Pennsylvania railroad yesterday lifted its general embargo against Philadelphia and other eastern points, and it is now possible for the first time since last June to ship without permit. Many consumers who have held off deliveries of iron and steel scrap by refusing to get permits, no longer have this excuse. Other railroads are taking similar action.

Buyers Still Rather Cautious

Pittsburgh, March 4.—Although business in scrap iron and steel is a trifle more active than it was a few weeks ago, it cannot be said that consumers are departing much from the policy of conservatism. They are buying a carload here and there, when the price is attractive, but refuse to become interested in sizable tonnages and cannot be induced to enter into long-time contracts at any figure. Tapering steel mill activities coupled with the fact that most consumers in this district started off the year with three to four months' supply on hand, may be advanced for the comparative indifference of consumers toward the market. Prices with the possible exception of cast scrap may be said to be seeking a trading level. A fair demand exists for cast scrap with No. 1 cupola rather finally held at $21 to $22 delivered and heavy breakable scrap quotable around $17 at consuming points. Small sales of heavy melting steel are reported at $14.50 and $14.75, and $15 seems to be the maximum price idea of most consumers although some sellers claim to have received as much as $16 on recent business. It is noted that prices established by carload sales usually become the basis for larger tonnages.

Big Buyers Hold Off

Buffalo, March 4.—Scrap men here say that mills in this district are strictly out of the market. The $12 price of heavy melting steel seems to be standing at that. Mills tell dealers that they can get all the steel they want at that price and are turning it down at that figure. Dealers seem to be uncertain as to whether rock-bottom has been reached on steel and point to prewar days when heavy melting steel was bringing as low as $10 to $11. The market for turnings appears to have evaporated and there is, in fact, no activity in any grade at the present time. There is some trading between dealers on borings and turnings, one firm here apparently wanting to speculate in turnings. This interest is piling what it is purchasing.

Market Acting Better

Cleveland, March 4.—Scrap iron and steel is decidedly better in the Cleveland market. Present prices are so low that, taking the 1914 quotations and adding to them increases in both freight rates and labor, they leave little room for further decrease. Of even greater import is the undercurrent of optimism that is cropping out here and there. Many of the larger consumers in this district say freely they believe scrap is as low as it will go, and claim to be looking around for storage space on which to pile several thousand tons or so. The belief that general business conditions are bound to grow better is a factor that also carries some weight. Although the market is glutted, heavy melting steel today is selling for $14.50 to $15, an advance of 50 cents. Turnings continue at $7.25, with virtually no activity. The prediction is made that at the first sign of buying turnings will rise abruptly. Considerable demand for stove plate, presumably from neighboring consuming districts, has developed here, and $16 to $17 more nearly represents the market than last week's quotations, which were $3 lower. Indeed, it is said that some stove plate has gone for as high as $19.

Further Reductions at Cincinnati

Cincinnati, March 3.—The scrap market is traveling a very rough road and prices still are shrinking. It was thought last week that the bottom had been reached but this does not appear to be correct, as further reductions are being made. Heavy melting steel seems to have suffered more than any other grade. No. 1 machine cast also is not able to hold its own, but has not been reduced proportionately as much as other kinds of scrap. There is said to be a large quantity of scrap accumulating that will be put on the market soon but buyers' yard stocks are not increasing very much because they are slow in taking in any more material until something definite is known as to what the future demand will be. The market is simply a waiting one with no assurances of early improvement.

Small Buying Stops Decline

St. Louis, March 3.—Tempted by the recent radical declines in scrap iron and steel, certain of the smaller dealers and yard men have been laying down material, which has resulted in halting the decline, and in several notable instances brought about slight reactions upward. Consumptive interests, however, continues as dead as heretofore, and opinion among the dealers is that when the present speculative movement has spent itself there probably will be a further slump. As much uncertainty and nervousness exists as at any time since the government prices went by the board, and conditions are by no means reassuring for either consumer or seller. Heavy melting steel is in better demand, as some of the larger dealers are short of this material on contracts, and are buying to fill these rapidly expiring obligations. The leading north side mill has adopted the practice of shutting down alternate weeks, while it is announced certain of the east side plants temporarily will close down completely. Cast grades are firmer, due to an existing scarcity. Little of this material is coming in and is hard to get. Stove plate is in demand and firmer, as it is being used by foundries because of the scarcity of cast iron.

Dealers Buy Some Material

Birmingham, Ala., March 4.—Old material dealers in Birmingham have

been purchasing some tonnage from large producers of scrap because prices are so low as to invite some speculation. Quotations are practically the same as they have been for the last two weeks. No predictions are ventured now as to when the market will improve.

Belgium Buys

Cast Pipe at New York—Oil Country Demand Good

New York, March 3.—A development in the eastern cast iron pipe market is a better volume of foreign inquiry, and within the past few days a sizable tonnage has been placed by the Belgium commission in New York City. However, the total volume of this business placed is still of relatively small proportions. Aside from 1500 tons for Bayonne, N. J., on which bids will be closed next week, little municipal inquiry of consequence is before the trade. Although no shading has been noted in prices, it is believed that a good tonnage would result in concessions.

Oil Country Goods in Demand

Pittsburgh, March 4.—Chief activity in tubular lines these days is in oil country goods, orders for which manufacturers are well supplied as current demands are running quite even with completed tonnages against old contracts. Inquiry for big tonnages of line pipe which have been before makers for some little time, have not yet closed. Merchant pipe in both wrought iron and steel continues extremely slow. This might be explained promptly by the seasonable lack of building operations and the fact that not a little new pipe is being offered by second-hand dealers from abandoned government plants. The National Tube Co. continues to run practically full, but a portion of the current production is being stacked and it is stated that they desire to keep the working organization intact rather than the size of the current orders is influencing the course of the management. Plenty of talk of lower prices is heard but concessions are denied.

Buying Spurt Not Continued

Chicago, March 4.—Although the past fortnight brought to the front more than the usual quantity of inquiry and some buying of cast iron pipe, it has not continued and at present no new business is pending. Bids were opened last week at Detroit on 4000 tons, but it is not known to whom the award will be made.

Heads Pittsburgh Steel

Pittsburgh, March 4.—At a meeting of the directors of the Pittsburgh Steel Co. here yesterday afternoon, John Bindley, first vice president of the company, was elected president in place of the late Wallace H. Rowe. Emil Winter, a director of the company, was elected first vice president to fill the vacancy left open by Mr. Bindley. Charles E. Beeson, secretary, was elected to the board of directors in place of Mr. Rowe and Edward H. Bindley takes Mr. Rowe's place on the executive committee.

Auto Sheets Main Activity

Some Interests Report Best Week Since Armistice But Other Branches of Demand Are Sluggish—Valley Operations Unchanged

Pittsburgh, March 4.—Although makers of sheets in this district have sufficient business before them to keep their plants going from 75 to 80 per cent of capacity, the fear openly is expressed that unless new business soon shows a decided increase a considerable curtailment is not far off. A really good business is doing in automobile sheets but it consists more of current orders than contracts, automobile builders having no different ideas with regard to the probable future course of prices than consumers of other kinds of sheets. An increase in the number of inquiries for electrical sheets is observed but actual sales are few and small. Buyers of ordinary black, galvanized and blue annealed sheets are content to take on supplies as needed. Plenty of talk is heard of lower prices but manufacturers deny they are shading and say that where lower quotations have been named there are special circumstances.

Operations Are Unchanged

Youngstown, O., March 4.—Operation of valley sheet mills shows no change but continues to hover around 65 per cent. With the exception of the shipping department, the plant of one maker is idle but enough orders have accumulated to warrant this maker to schedule his mills better than 50 per cent next week. A maker in the upper part of the valley is centering his efforts on the production of highly furnished sheets for the automobile trade and it is heard enough business has been taken to keep four mills busy until the end of this week.

Buyers continue to confine their purchases to small lots and it is the aggregate of these orders that is keeping the mills partially in operation. Delivery can be had from almost any mill in this territory in 10 to 14 days and in some cases in less time. Inquiry in some quarters is more active than in others. Among inquiries pending is one for 1000 tons of galvanized for export. This is the largest inquiry heard for several weeks among valley mills, since most of them range from 5 to 50 tons.

A maker in a nearby district recently took on 400 tons of black for delivery over several weeks. This maker has guaranteed that an adjustment will be made in the price provided there is any drop in the market before the last of the order is delivered. To protect himself, if such should come about the maker is rolling the sheets from sheet bar croppings. The latter can be purchased at present for approximately $22 a ton. In converting them into a sheet bar by first bringing them up to a white heat in packs and then to gage on a merchant mill, the conversion cost it is said does not exceed $15 per ton. In rolling the bars and bringing them to gage on the finishing mill, the conversion cost it is declared would average approximately $25. This would make the cost of production around $2.77, average. The sale price was such that the maker is well protected despite the fact that it is under the present market quotation.

Selling More to Auto Makers

Cleveland, March 4.—What they term to be "the first real improvement in business since the armistice was signed" was reported this week by large makers of sheets in this district. Automobile manufacturers took the bulk of the output. The fact that inquiries were received from practically all of the leading automobile manufacturing centers served to add importance to the increased demand.

Buying Hand-to-Mouth

Chicago, March 4.—Sheet mills continue to run full with new business for nearby delivery about equalling production. However, this is not an economical operation as the limited tonnages cause interruption of regular operation and frequent changes. It is impossible to accumulate business on books, as the volume is not sufficient to back up.

Operators Argue for Old Rate on Iron Ore

Argument for restoration of the freight rate of 63½ cents on iron ore from Minnesota mines to docks were presented during the past week to Edward Chambers, director of the division of traffic, United States railroad administration, by a committee representing operators. The committee consisted of F. B. Richards, of M. A. Hanna & Co., John A. Savage, of John A. Savage & Co., and Richard Jones, of the Republic Iron & Steel Co. Mr. Chambers took the case under advisement and a decision probably will be announced by the railroad administration in a few days. The arguments were similar to those presented by the operators to the Minnesota legislature in an effort to have the legislature petition the railroad administration for a reduction in the rate and which were published in the Feb. 20 issue of THE IRON TRADE REVIEW. The committee, however, emphasized a point which it considered especially important. It was pointed out that when the old Mesabi rate of 55 cents was in effect it included the use of locomotives and the loading of the cars. Now the operators must pay $75 a day for locomotives and five cents a ton for moving the ore from stock piles onto the cars, more than doubling the old rate, while the interstate commerce commission had ruled that 63 cents a ton was a fair rate. The present rate is $1, with an additional war tax of three cents.

No sales for the 1919 season have yet been made. Buyers are hopeful of a reduction in vessel rates which will serve to reduce the cost of the ore.

Feeling in Bars Brighter

Automobile Buying Continues But Price Uncertainty Holds Down Orders —Implement Trade Closing at 2.65c—Pittsburgh Bar Iron Lower

Chicago, March 4.—Continued improvement in sentiment among consumers of soft steel products is noted by steelmakers and apparently the only deterring factor is the expectation of lower prices which holds consumers back from buying for extended delivery. Railroads are particularly anxious to place their business immediately, but are held back by lack of authority from the railroad administration. Some managers are beginning to worry about the possibility of obtaining delivery of material when all rush into the market for prompt supplies when the deadlock is broken. This attitude on the part of railroads probably will be reflected shortly among other consumers. The leading interest continues to operate its finishing end at approximately 100 per cent capacity and its ingot production is somewhat in excess of 100 per cent. The leading independent is somewhat less favorably situated at the moment and is operating about 65 per cent. Some new steel bar business is coming out from time to time and is placed according to the situation. All new business demands immediate delivery and is placed with the mill which chances to have a rolling in which the specification will fit with least delay.

Bar iron is being quoted at 2.65c to 2.70c, Pittsburgh, and inquiry is moderate. In fact some of this inquiry is believed to be simply tentative to feel out the market as sales are in much less volume. All mills in this section are operating, but not at full capacity and the situation is not satisfactory. Hard steel bars rerolled from rails are not in demand and some mills are idle while others are operating single turn. No indications are apparent of an improvement in this department.

More Tonnage Being Placed

Cleveland, March 4.—Steel bars continue to show the most activity of any finished product in this district. More tonnage in the aggregate is being placed with the mills though this in no case runs to a very large amount and is confined almost strictly to nearby requirements. The automobile interests have been the leaders in this class of buying and there has been also some business placed by parts manufacturers. Some of the largest automobile builders in this district and Toledo report that the trade in passenger cars now is striking its gait but efforts continue to be made to get lower prices on steel and other materials entering into construction so that a reduced price to the public may be offered. Farming implement manufacturers in this district have been buying some tonnage for early shipment for which they have been paying 2.65c, Pittsburgh. This is in accordance with the $5 per ton reduction allowed to these interests from the government price against which the general reduction of $4 on Jan. 1 is offset. One northern Ohio consumer is in the market for 600 tons of bars for specialty manufacture. Shading continues to be carried on in rerolling bars and as low as 2.50c, mill, has been reported. Some of these concessions are due to the efforts of mills to equalize freights as against the competitors nearest to the point of delivery.

A local automobile parts manufacturer has been inquiring for 2500 tons of high manganese, high silicon bars for spring and is still negotiating.

Bar Iron Tonnage Closed

Philadelphia, March 4.—A purchase of 767 tons of galvanized bars from an eastern mill by the Emergency Fleet corporation is the largest bar iron award placed in some time. Because of the specifications, some mills quoted on refined iron. If refined iron was bought, the current market quotation of 2.90c, base Pittsburgh, was shaded heavily, but if common iron was taken the price was cut slightly. These bars are for floating dry docks.

Bar Iron Prices Cut

Pittsburgh, March 4.—A reduction of $8 per ton has been announced by makers of iron bars in this district, putting the price to 3.10c, Pittsburgh, for common merchant iron in carload lots and 3.50c for less than carloads. The reduction does not apply to refined iron bars which were made on a basis of 5c, Pittsburgh, for carload lots. Demand for iron bars is reported to be steady but buyers are merely covering immediate needs and purchases are entirely in small lots. Merchant steel bars continue to be taken only as wanted and the aggregate of orders and the lack of old bookings of any considerable size is putting no strain on mill capacity. Buyers do not have to enter into long time contracts to be assured of deliveries.

Bolt Mills Under Capacity

Chicago, March 4.—Manufacturers of bolts and nuts are operating at about 75 per cent of capacity, pressure for production having been relieved to a marked degree. New business in this line is about equal to production and this branch of the industry is in a comfortable position.

Holding Nut and Bolt Prices

Cleveland, March 5.—With no sizable inquiries received and few orders placed, the leading producers of nuts and bolts in this district are holding firm to prices. They are not meeting the concessions which are reported as being made by some makers elsewhere. On rivets, when it is a question of passing up fair sized orders, the prices of $4.20 and $4.30 are being met.

Rivet Demand Slowing Down

Pittsburgh, March 4.—Makers of rivets are finding business considerably slower than it has been recently. Specifications against the Emergency Fleet corporation orders are lighter and the fact that some manufacturers have shown a disposition to accept lower prices rather strengthens the belief of buyers that nothing is to be gained by big purchases at this time. Some manufacturers still are quoting 4.40c Pittsburgh for structural rivets and 4.50c for boiler rivets. The market distinctly is in the buyer's favor on small rivets, and notwithstanding the disposition on the part of manufacturers to cut prices to secure orders, the actual amount of business being booked is small. Such orders as have been booked have been generally at 50, 10 and 10 off. Most makers are holding prices on nuts and bolts steadily but the demand is on a decline, and shading is appearing in some directions.

Shafting Capacity Half Full

Pittsburgh, March 4.—Cold-rolled shafting mills are being operated at about 50 per cent capacity, a few that are producing against stock, doing slightly better. New demands are reported to be fairly numerous, but they involve small quantities entirely and call for prompt shipment. The best demand comes from the automobile makers and they are not entering into contracts, since prompt delivery now is being made against orders. Some cutting of prices is noted on steel left in contractors' hands through cancellation of government orders, but manufacturers continue to quote 21 per cent off list firmly.

Steel Users Buy Closely

Semifinished Material Being Taken in Job Lots and Quick Shipment Demanded—Price Softness on Alloy Steel, Slabs and Other Forms

Pittsburgh, March 4.—Demand for semifinished steel still is purely hand-to-mouth, and practically all of the business is directly between producers and consumers. Brokers, who ordinarily handle large tonnages complain that business with them is quite as dull as it was during the war period following the order of the war industries board that all sales of semifinished steel must be directly between producers and consumers. No great trouble is experienced by producers in supplying all current demands, even for sheet bars, requirements of which are comparatively large due to the fact that the sheet makers are relatively well off in the matter of bookings. It is reported that sheet bars now are the chief product of the Edgar Thomson works of the Carnegie Steel Co., owing to the dearth of new rail orders. Demands for billets are limited but the pipe mills are pretty well absorbing current production of skelp. Production of slabs is more than ample for current needs. Intimations of

price reductions are common enough, but manufacturers usually deny they are cutting. Wire rods are sought for export but only small tonnages are being marketed and these at the same prices as are quoted to domestic consumers. Export inquiries for semifinished steel generally are out of proportion to the actual sales.

Spot Business Predominates

Youngstown, O., March 4.—Sheet bar makers are having their troubles in keeping buyers satisfied and at the same time getting the business. Most of the latter coming to the mills is for small lots ranging from 10 to 25 and 35 tons with carbon specifications variable. Besides many of the buyers want immediate delivery. Makers would be in a position to promise quick shipment if the orders were of similar carbon content and of such tonnage as would warrant immediate rolling. But where the carbon content of the mixed orders covers a wide range, it is the usual custom to leave the orders accumulate so as to give the mill a steady run. Right now, however, the answer "we'll roll your order when the mill is working on a similar specification" means nothing to the buyer of sheet bars and if he cannot get a definite promise of delivery he will not place his business but will go where an early shipment is guaranteed. Consequently nothing but spot business is being done. Sheet bar rollings are not as heavy this week as they were the week before and if anything the inquiries show a slight decrease.

Fair Activity in Valley

Youngstown, O., March 4.—Inquiry is fairly active for both hot and cold-rolled strip steel and while the business coming to the valley is not in large quantities, still it is enough to keep the mills occupied. Shipments of fender and frame stock billed to Detroit automobile makers this past week were fairly heavy.

Alloy Steels Are Shaded

Cleveland, March 4.—Some shading of prices in alloy steels to the automobile trade is being done as some more attractive business of this character is being put before the manufacturers. It is pointed out that in connection with this cutting that alloy steel prices were not under government control and that in view of their unrestrained advance during the war, a readjustment at present is in line. Regular lines of semifinished steel particularly slabs and sheet bars continue to develop price irregularities. Following the sales of slabs in this district several weeks ago at a concession of $5 a ton or at $41 as reported at the time, offers of similar material have been made by some producers at reductions of more than that figure. Current business continues to be made up of small lots for quick shipment.

Automobile Makers Buying

Pittsburgh, March 4.—Practically the only demand for cold-rolled strip steel is for the automobile manufacturers and even they are not buying much in advance of actual requirements, although providing the mills with from one to two weeks' advanced business.

Ferro Stocks Have Grown

Producers Accumulate Considerable Tonnage—Believe General Price Reductions Futile—Alloy Prices Still Easy as Business Drags

New York, March 3.—At a meeting of ferromanganese and spiegeleisen manufacturers held here last week to discuss conditions affecting these products, it developed that stocks already piled at the furnaces are fairly large, although not enough so for discomfort. It was the consensus of opinion that efforts to make sales under present conditions by the radical lowering of present prices in most cases would result in reductions in the market level without any appreciable volume of resulting business. It is likely, therefore, that as long as demand continues as quiescent as at this time, most of the producers will continue as at present to adhere to the level of $200 to $225, delivered, for 80 per cent metal, even though the real market, as established by sales by one producer and offers by another, is $150, delivered. As a result of the large stocks already accumulated at the furnaces and the high costs now prevailing, it was held by the producers that it is better to continue to follow the policy of placing furnaces on the idle list rather than accumulate any additional tonnages. It developed at the meeting that practically all of the ferromanganese produced, since the 70 per cent standard was rescinded, has been 80 per cent ferromanganese. In fact, approximately 100 per cent of the metal made in January and February, and much of that made in December, was 80 per cent.

Only two merchant furnaces in the east now are making ferromanganese. These are the Sheridan, Pa., and Oriskany, Va., furnaces of E. J. Lavino & Co. The Dunbar, Pa., furnace of the American Manganese Mfg. Co., which has been out of blast for relining, will resume shortly. One of the furnaces of the New Jersey Zinc Co at Palmerton, Pa., now is the only American stack engaged in the production of spiegeleisen. Demand both for spiegeleisen and ferromanganese during the past week has been almost entirely lacking. Spiegeleisen continues to be quoted at $45 to $50 per ton, at the furnace, for 16 to 20 per cent metal.

Business Almost Stagnant

Pittsburgh, March 4.—Trading in ferroalloys here is dull to the point of almost utter stagnation and prices are as indeterminate as ever. Makers' price ideas have not changed much, but on resale tonnages values still are slipping, due to the increasing desire of consumers to be rid of the material they have contracted for but for which they now see no need. Offerings of 50 per cent ferrosilicon have been made by consumers having excess supplies as low as $90 a ton, delivered, without arousing much interest and plenty of this alloy is to be had at $95 and $100, freight allowed. Producers' quotations, meanwhile, range as high as $120.

What is true of ferrosilicon is true also of ferromanganese, resale offerings of which are being made without bringing about sales at as low as $150, delivered, for 70 per cent. Makers still are quoting as high as $225, but a revision of quotations on direct business is expected shortly. Reports have been current here lately that some makers already are prepared to take on new business at considerably under $150, delivered, for higher than 70 per cent ferromanganese. Little is going on in spiegeleisen; in fact, dealings are so limited that it is difficult to arrive at reliable quotations even on resale tonnages.

Fluorspar prices definitely are weaker, although hardly enough business is passing upon which to base quotations. Western producers are quoting gravel spar at $25, delivered Pittsburgh and in the East, but one Kentucky company lately has been quoting $18, f. o. b. mines, which would make the price laid down here slightly under $21.50.

Await Price

Before Placing 513,000 Tons of Rails —Foreigners Buy Light Rails

Philadelphia, March 4.—Latest advices from the railroad administration officials in charge of this matter are that the 513,000 tons of rails for domestic roads will be bought when "prices are lower." Orders for many locomotives also will be released when prices are lower, it is stated. A railroad administration order for 3000 cars to the Cambria Steel Co. recently was released. These originally involved 50-ton cars for domestic roads and are now replaced by 70-ton cars.

It is understood that large steel foundry interests again have recently reduced prices on bolsters, side frames and miscellaneous castings.

Rail Mills Need Business

Pittsburgh, March 4.—Business in standard rails before makers in this district no longer bulks large as new orders, being chiefly for repair work, have not been keeping pace with the amount of tonnage completed. It is understood that the Edgar Thompson works of the Carnegie Steel Co. now is producing more sheet bars than rails although some business in rails still remains to be completed.

Light Rails for Export

Chicago, March 4.—Domestic demand for light steel rails is unusually slack but tonnages going into exports are saving the day and keeping western capacity running full. These are going to Japan, South America and South Africa, and a recent order for a moderate tonnage has been booked from France. Large deliveries continue to be made of standard steel rail, but new buying is confined to small tonnages for immediate delivery, aggregating 5000 to 10,000 tons per week. Frog and crossing builders are busy turning out material for use in connection with new track work and are taking full tonnages

More Shape Orders Moving

Tonnage in East More Encouraging—Charleston Armor Plate Contract Ordered Ahead—Shops Placing Fill-in Lots

New York, March 3.—Although the eastern structural market is far from active, there is sufficient new business coming out to offer encouragement to fabricators. Whereas the market a month or so ago was virtually barren of inquiries, several new tonnages are out at this time, and some buying is being done. The largest award during the past week involved 900 tons, to be furnished by the American Bridge Co. for a bridge on the Southern railroad. This has been the first buying of any consequence by the railroads in several weeks. The American Bridge also received an order for 250 tons for the Consolidated Gas Co., Baltimore. A similar tonnage was placed with the Bethlehem Steel Co. for an office building, to be erected in Washington by the International Association of Machinists. Bids were closed today on 1000 tons for a government hangar at Hampton Roads, Va. Other tonnages before the trade include 700 tons for a public school in Brooklyn, and 600 tons for a highway bridge over the Susquehanna river in Wyoming county, Pennsylvania. Prices on plain shapes are unchanged at 2.80c, Pittsburgh.

To Finish Charleston Plant

Pittsburgh, March 4.—The government has decided to go ahead with the naval ordnance plant at Charleston, S. C., and as a result of this development, the Ambridge, Pa., plant of the American Bridge Co., which has been running only four days a week lately, on March 15, will go on full time. This company has the contract for 24,000 tons of steel for that plant. This has been the one interesting development in an otherwise extremely dull and featureless week in shapes. Some Emergency Fleet corporation business remains uncompleted, but is far less of a backlog than it was a few weeks ago and in spite of the placing of fairly numerous small tonnages, independent fabricating interests are not running their mills better than 50 per cent of capacity.

Shops Fill Out Stocks

Cleveland, March 5.—Fabricating shops have been coming into the market more freely for old tonnages to fill out stocks and on the whole there is more activity and promise in structural lines. No awards are reported but fabricators are figuring on several jobs which are expected soon to be placed. One of these involves 600 tons for delivery in the east.

Building Plans Come Slowly

Chicago, March 4.—Although a large number of construction projects are in the hands of architects and engineers and some even have progressed to the point of asking figures, comparatively few get to the point of buying material. This is not due entirely to the cost of steel but in as large measure to the higher price of other materials and of labor. Just when the deadlock over the cost of construction will be resolved is difficult to determine. At present public improvement and railroad construction offer about the only new business getting to mill books. The Chicago and North Western railroad has placed 143 tons for a bridge at Council Bluffs, Iowa.

Builders Postpone Action

Philadelphia, March 4.—Although slightly greater activity is noted in the structural market here prospective builders generally continue to postpone action because of the expectation of lower prices. Numerous projects, including several apartments and an 11-story office building, are held up for this reason. The only award of size in the week was 300 tons for a garage. The American Bridge Co. and the Phoenix Bridge Co. are low on 1000 and 200 tons for crane runways and shipways respectively at the Philadelphia navy yard. Some doubt is expressed as to when the Kenilworth pier, this city, 1200 tons, will be placed. Fabricated prices now being quoted here range from $100 to $110, erected, Philadelphia, for buildings of the typical apartment house class. The belief generally prevails that the construction requirements are two years behind and much business will come out as soon as prices are regarded as being near the bottom.

CONTRACTS AWARDED

Bridge for Southern railroad, 900 tons, to the American Bridge Co.

Office building for International Association of Machinists, Washington, 250 tons, to the Bethlehem Steel Co.

Plant extension by Consolidated Gas Co., Baltimore, 250 tons, to the American Bridge Co.

Black and White Garage, Philadelphia, 300 tons, to Montgomery Iron & Steel Co.

CONTRACTS PENDING

Drill shed at armory, Thirty-third street and Lancaster avenue, Philadelphia, 600 tons, bids being taken.

Crane runways, Philadelphia navy yard, 1000 tons, American Bridge Co., low bidder.

School building in Brooklyn, 700 tons, bids being asked.

Government hangar at Hampton Roads, Va., 1000 tons, bids closed March 3.

Highway bridge, Wyoming county, Pennsylvania, 600 tons, bids being taken.

Plate Market Holds Firm

No Extension of Recent Price Shading in East is Shown—Business Awaits Upon Thursday's Meeting—Cargo Boats Held up

Philadelphia, March 4.—Work on transports being built at Hog island, has been suspended by the Emergency Fleet corporation. Some time ago plans were changed to make these vessels of a cargo instead of a transport character, but it was found even though they are rated at 8000 tons, they would not carry as much freight as a standard 7500-ton vessel. The suspension involves 93,000 tons of steel, most of which, however, either has been delivered at Hog island or is in fabricating shops. In view of the recent shading on plates by one eastern maker it is regarded as remarkable that no further cutting has been done the past week. It is learned that sales managers of companies in this district have given salesmen rigid instructions that they are to give no consideration whatever to requests for concessions. This applies not only to plates but all other steel products. It is a noteworthy fact that demands for plates and other products which showed an improvement up to the early part of last week, has fallen away almost entirely. This apparently is due to the desire of consumers to await developments of Thursday's general meeting of manufacturers before taking any action. There is some tendency here to believe that the meeting may result before long in the usual open-market conditions, but in other quarters it is expected that another period of concerted action will follow. So complete is the present uncertainty that even radical action would not occasion supply.

Barges Are Awarded

New York, March 4.—Terry & Tench have been awarded the contract for building 12 self-propelled barges for the New York state barge canal by the railroad administration. The Dravo Construction Co. will build four of these craft and Stare & Bennett of New Berne, N. C., four. These barges in all call for about 6000 tons of steel which is still to be placed.

New Plate Orders Moderate

Pittsburgh, March 4.—New demands upon the makers of plates in this district, like those for practically all kinds of finished steel, are fairly numerous, but run entirely to small lots for immediate shipment. Most makers still have some Emergency Fleet corporation business uncompleted, but this is sufficient to only partly engage capacity and fairly prompt shipments now can be made on ship plates.

Inquiries Are Heavy

Buffalo, March 4.—Plate demand has picked up a trifle though domestic tonnages are not heavy. Inquiries for one lot of 1000 tons and another of 1200 tons are noted. Export plate inquiry runs much higher but there is very little selling. Makers are receiving inquiries for export tonnages ranging all the way from 500 to 50,000-ton lots.

Pig Iron Output Drops 1.3 Per Cent

Production Loss is Slight But Shorter Month Cuts Tonnage 11 Per Cent—Active Stacks Are Fewer, Showing Loss of 10.5 Per Cent in Last Two Months—Spiegel Production Drops

WITH 16 fewer stacks in operation than in January, last month showed a drop in pig iron production of only 1.3 per cent.

MONTHLY PRODUCTION

	1919	1918	1917
January	3,306,279	2,403,227	3,159,839
February	2,947,555	2,318,242	2,649,935
Total 2 mos.	6,253,834	4,721,469	5,809,773
March		3,209,996	3,255,813
April		3,273,355	3,328,061
May		3,451,884	3,413,677
June		3,316,148	3,260,234
Total 1st half.		17,972,852	19,067,559
July		3,408,584	3,337,442
August		3,378,479	3,238,970
September		3,413,223	3,140,742
October		3,482,392	3,296,286
November		3,347,844	3,198,597
December		3,434,114	2,885,380
Total 2d half.		20,464,636	19,097,417
Grand total.	6,253,834	38,437,488	38,164,976

Actual production in February was 2,947,555 tons, against 3,306,279 tons in January, a loss of 358,724 tons. Thus the actual loss in output was 11 per cent, allowance for the shorter month, however, cutting this decrease to 1.3 per cent.

Production last month was the lowest since September, 1915, with the exception of four months, three of which were marked by the demoralized traffic conditions prevailing last winter. The output so far this year exceeds 1918 by 1,530,000 tons, and 1917 by 450,000 tons.

The decline, while rather well distributed throughout the country, was more noticeable in the northern section. Furnaces in New York, Pennsylvania, Ohio and Illinois registered losses in tonnage, while the Alabama and Virginia total remained unchanged.

Active stacks on the last day of February numbered 314, against 330 on Jan. 31, and 351 on Dec. 31. The number of furnaces in operation is 10.5 per cent less than at the end of 1918.

The daily average production dropped to 105,270 tons in February, a loss of 1384 tons compared with the January daily average of 106,654 tons. The steel works or nonmerchant furnaces produced 77,515 tons daily, as against 80,025 tons per day in the first month of the year, a loss of 2510 tons. Merchant stacks showed a gain with a daily average of 26,582 tons in February, 1247 tons above the January figure of 25,335 tons.

Of the total tonnage produced, 2,170,411 tons were made by the steel works furnaces, compared with an output of 2,480,789 tons for these stacks in January, a loss of 310,378 tons. The merchant total output also showed a loss. These furnaces produced 744,306 tons of pig iron in February, compared with 785,384 tons the preceding month, a loss of 41,078 tons.

Spiegel production continued its rapid decline reported last month and for February the tonnage was only 6309 tons, a loss of 9617 tons compared with the January output of 15,926 tons. A gain of 2349 tons was made in ferro production, the February total being 26,529 tons, and for January, 24,180 tons.

Four merchant stacks were blown in and six blown out, a net loss of two. Seventeen steel works stacks were taken off the active list and three were relighted, a net loss of 14.

AVERAGE DAILY PRODUCTION

	1919	1918	1917	1916	1915
Jan.	106,654	77,523	101,930	102,319	51,323
Feb.	105,270	82,794	94,641	106,157	59,521
March	103,548	105,026	107,343	66,009
April	109,112	110,936	107,517	70,484
May	111,351	110,119	108,535	72,747
June	110,538	108,675	107,127	78,998
July	109,954	107,650	103,907	82,687
Aug.	108,982	104,483	103,156	89,510
Sept.	113,774	104,691	106,935	94,478
Oct.	112,335	106,332	113,167	100,656
Nov.	111,595	106,620	110,593	101,174
Dec.	110,602	93,077	102,715	103,278
Avg.	105,997	105,293	104,562	106,610	81,022

FEBRUARY PIG IRON

States	No. of stacks	No. in blast last day of month: Feb.	Jan.	Total tonnage made: Merchant	Nonmerchant	Totals: Feb.	Jan.
Pennsylvania	161	117	113	226,057	826,729	1,052,786	1,210,553
Ohio	80	67	70	140,474	576,220	716,694	806,830
Alabama	45	25	28	105,724	85,826	191,550	180,491
Virginia	19	12	12	34,010	.....	34,010	34,935
New York	28	18	21	77,315	104,672	181,987	217,647
New Jersey	5	3	3	16,326	.....	16,326	18,059
Illinois	25	22	23	49,045	230,801	279,846	313,540
Colorado	6	3	3				
Indiana	16	16	16	34,704	285,211	319,915	346,138
Maryland	4	3	4				
Wisconsin	6	4	4				
Kentucky	7	4	4				
West Virginia	4	3	4	28,284	36,586	64,870	75,553
Tennessee	17	9	8				
Washington	1	1	1				
Georgia	2	0	0				
Texas	3	0	0				
Minnesota	3	3	3	32,367	24,366	56,733	62,427
Michigan	3	3	3				
Missouri	1	1	1				
Spiegel—All states	..	..	..	.....	.....	6,300	15,926
Ferro—All states	..	..	..	.....	.....	26,529	24,180
Totals	435	314	330	744,306	2,170,411	2,947,555	3,306,279

New Demands

In Tin Plate Light—Largest Maker Runs Well—Independents Low

Pittsburgh, March 4.—Operations of the tin mills of the American Sheet & Tin Plate Co. still are only slightly less than 100 per cent, but the independents are barely holding to 50 per cent operations. New business with both the independents and the leading interest is moderate in the extreme, but the latter is better off in the matter of unfilled tonnage. This may be explained by the fact that the independent companies, following the signing of the armistice, got busy on standing orders and to a large extent had them out of the way early this year. The American Sheet & Tin Plate Co., on the other hand, did little with its old bookings in December, giving practically its entire supply of sheet bars to its sheet mills. This old business together with the specifications from some of its big customers is what is keeping this company busy, and it also is producing to some extent against stock.

Ore on Dock Drops

Ore on dock at Lake Erie ports on March 1 was 7,730,000 tons against 9,515,000 tons a year ago, a loss of 1,800,000 tons. Ore shipments to interior furnaces during February were 900,000 tons against 555,000 tons in the same month last year.

Tax Handicaps Minnesota Mines

Mining Expert Shows Legislators How Proposed Super-Tax on Profits Would Make It Difficult for Independents to Compete With Other Districts—Drilling in Progress in Three Other States, None in Minnesota

A RENEWED battle against the imposition of supertaxes on profits of iron ore mines in Minnesota continues in progress in the legislature of that state, with the independent operators making strong efforts to defeat the proposed legislation. A comprehensive survey of the situation was presented recently to the house committee on taxation by Dwight E. Woodbridge, the well known Minnesota mining expert. He compared some of the leading competitive iron ore districts of the world to show that only a slight addition to the taxes of the mining interests in Minnesota will disqualify them from competition with other districts and will react against the state.

"There is now under way a project for the construction of great steel mills on New York bay," he said. "As I understand it, this project simply waits action by the United States government permitting of the filling of the Jersey flats near Newark. Ores for such a plant as it is planned to erect there will come from Cuba, Brazil, Newfoundland, from the states of New York and New Jersey, from Spain and, perhaps, from Sweden and Norway. They are unlikely to come from the interior of the United States and cannot, unless we are on a strictly competitive basis. This plant and others like it will be direct competitors of steel mills which secure their ores from Minnesota. With the building of such a fleet of American merchant ships as is planned ocean freights will be so low that bulk freight like iron ore will be carried at very small cost.

"There are eight or nine great known iron ore districts in the world. These are, in the order of their size, in Brazil, Newfoundland, eastern France, Lorraine and Luxembourg, around Lake Superior, in northern Sweden, in eastern Cuba, in Alabama and Georgia, in eastern New York and New Jersey, and, perhaps a ninth district in Norwegian Lapland north from the arctic circle around the White sea. All of these are competitive, one with another, insofar as is concerned the world's trade.

"It is a curious but none the less indisputable fact that nature seems to have equalized the advantages and disadvantages of most of these great districts so that almost every one of them can compete on fairly even terms with each of the others, at naturally equally competitive points. This equality is so close that any added burden, however slight, put on one field may be too much for it to overcome."

Mr. Woodbridge went on to analyze the positions of the ore fields with respect to the leading markets, most of the information being summarized in the accompanying table which was submitted to the committee.

"But we need not go so far away for competitive ores as even New York and New Jersey," he continued. "Michigan is having a tremendous expansion and the ore beds of that state while not exposed to the surface as are some of those of Minnesota may be as extensive and productive. As near as I can learn taxes upon mines in Michigan are much less than they are with us at the present time. Figures given me by the county auditors of the three iron counties of Michigan show that taxes paid by mining companies there in 1918 varied from 1.5 cents a ton on their output to as high as 15 cents, averaging about 8 cents. In 1918 the United States Steel Corp. paid about 28 cents a ton on its production in Minnesota, and this year may pay even more.

"I do not think the Steel corporation will be so seriously affected by additional tax burdens as will be the individual operator, the local Minnesota man who is developing small properties and who has put his own money into the mining game. These operators are the ones who will be handicapped by additional taxation to such an extent that some of them will have to go out of business.

"I know of half a dozen drilling companies under way now in Wisconsin and Michigan in a search for ore in which an aggregate of more than a million dollars is being spent. I know of one large company in New York state that is arranging to bore six miles of holes in its ore beds preparatory to extension of its mining operation; I do not know of one drill working in Minnesota in a search for ore bodies."

Mr. Woodbridge declared that considerable progress had been made in developing the low-grade east coast ores of the Mesabi range. He said several hundred thousand dollars had been spent by mining interests with which he is identified in preliminary research and that they are so confident of ultimate success that they are now making plans for the construction of works that will cost several million dollars "to finally prove that all these billions of tons of waste rock of value and will be the basis of an industry that ultimately will pay billions to labor in Minnesota."

Mr. Woodbridge submitted the following table showing the gross return to the mine on Mesabi nonbessemer base standard ore, analysis 51.50 iron and 10 per cent moisture, after paying rail and lake freight and selling charges, to get the ore to Lake Erie, where the base price applies. Actual shipments of Mesabi nonbessemer ore run about 1.5 per cent under the base grade, and the price received, therefore, will be from 15 to 20 cents under the figure given in the price column.

Year	Mesabi nonbess. price	Rail frt. to Lake Sup'r	Lake frt. & selling, etc.	Total chgs.	Gross return to mine
1909	3.50	.50	.75	1.55	1.95
1910	4.00	.80	.80	1.60	2.40
1911	3.50	.80	.70	1.50	2.00
1912	2.85	.60	.60	1.20	1.65
1913	3.40	.80	.65	1.25	2.15
1914	2.85	.60	.60	1.20	1.65
1915	2.85	.55†	.60	1.15	1.70
1916	3.55	.55	.70	1.25	2.30
1917	5.05	.55	1.20	1.75	3.30
1918	5.25*	1.00	1.20	2.20	3.05
Average					1.89

*Average of various prices set by government during year.
†From June 1, 1915.

Leading Competitive Iron Ore Districts of World

Location of district	Tonnage	Average grade of ore, per cent	Tons of iron in ore	Freights to competitive points	Cost at furnaces in units of iron
Brazil	5,000,000,000	68	3,400,000,000	$4.00	$0.073
Newfoundland	3,500,000,000	50	1,750,000,000	1.25	.050
Lake Superior	2,750,000,000*	52	1,430,000,000	2.85	.132
Sweden	2,300,000,000	57	1,254,000,000	2.00	.066
Northern Cuba	3,000,000,000	36	1,080,000,000	1.00	.075
New York and New Jersey	2,500,000,000†	35	875,000,000	.75	.057
Alabama	1,750,000,000‡	36	630,000,000	.25	.035
Norway	500,000,000†	35	175,000,000	2.00	.090

*Competitive points for Lake Superior ore are here taken as the Atlantic coast, which is not strictly correct, for very little lake ore can reach the coast. If Lake Erie points were taken, the cost per unit would average 8.1c on a 10-year period with a reasonable estimate for profit.
†These are all concentrating ores, and the cost of concentration is considered.
‡Alabama ores are figured as smelted at the mines, and to the cost at furnaces must be added the freights to the ocean, for true competitive point, which is not done above.
All the figures are based on normal conditions, both as to freights and mining costs.

Figures Show Increasing Exports

More Active Foreign Demand Adds to Exports of Iron and Steel While Import Figures Show Sharp Falling Off—Pig Iron Shows Only Gain in Imports—Semifinished Exports Fall Off Sharply

EXPORTS of iron and steel during the month of January showed a marked increase over the figures for December, as compiled by the bureau of foreign and domestic commerce In practically all lines a gain was shown with the exception of semifinished material, which revealed a marked decrease. During the month export of semifinished totaled 11,594 tons which is a decrease of 52,296 tons compared with the figures for December. This drop can probably be laid to the termination of exports of munition material and not to a lack of foreign commercial business.

IMPORTS AND EXPORTS, GROSS TONS

1915	Imports	Exports
July	20,858	380,340
August	27,556	405,949
September	23,345	382,113
October	34,318	349,843
November	37,131	362,764
December	35,408	353,853
1916		
January	15,824	360,102
February	20,279	368,980
March	15,159	438,649
April	20,176	384,452
May	32,114	538,657
June	26,885	515,214
July	14,774	502,330
August	23,255	571,401
September	25,550	643,762
October	30,169	588,892
November	42,545	554,219
December	44,134	550,988
1917		
January	40,910	608,281
February	24,947	449,099
March	37,943	606,559
April	48,213	519,397
May	26,479	582,303
June	29,080	629,305
July	28,859	346,393
August	26,129	503,075
September	19,058	499,067
October	14,310	571,868
November	13,995	473,549
December	14,642	653,344
1918		
January	12,475	490,259
February	12,941	438,848
March	14,345	379,924
April	11,371	462,887
May	14,397	488,515
June	13,913	418,605
July	11,511	453,789
August	12,520	512,104
September	8,440	473,688
October	15,744	426,767
November	11,582	471,427
December	28,996	356,641
1919		
January	16,913	371,570

Total export figures for the month were 371,570 tons which is an increase of 24,929 tons over December and a loss of 118,689 gross tons compared with the figures for January, 1918.

A falling off of import business during the month as compared with December's figures is noted, although the figure does not reach the low mark of January, 1918. During the month 16,913 gross tons were imported which is a decrease of 12,083 gross tons compared with December and an increase of 4438 gross tons compared with the corresponding period a year ago. This drop probably is due in part to European embargoes now in effect.

IRON ORE IMPORTS, GROSS TONS

From:	January, 1919	January, 1918	Seven months ending January, 1919	Seven months ending January, 1918
Spain,	18,467	.....	49,566	13,807
Sweden	.....	.....	.....	17,718
Canada	4,184	491	90,981	158,410
Cuba	10,600	35,601	352,773	350,957
Other countries.	.....	.....	1,287	1,634
Total	33,251	36,092	494,607	547,526

IRON AND STEEL EXPORTS, GROSS TONS

	January 1919	January 1918	Seven months ending January 1919	Seven months ending January 1918
Scrap	632	407	1,184	21,184
Pig iron	36,757	20,581	208,446	209,707
Steel billets, ingots and blooms	11,594	195,385	815,344	1,183,777
Wire rods	15,657	14,800	39,906	77,113
Steel rails	65,024	35,441	306,191	253,418
Steel bars	29,275	59,336	250,446	357,985
Iron bars	10,330	5,328	44,607	30,941
Struc. iron and steel	30,248	25,338	149,482	152,227
Hoops, bands and scroll	7,613	4,353	31,435	36,282
Sheets and plates	91,913	60,266	1,575,068	479,271
Tin and terne plate	29,399	19,949	68,176	124,326
Barbed wire	4,257	8,492	157,310	112,408
All other wire	10,498	13,591	96,614	111,031
Cut nails	472	162	1,884	2,946
Wire nails	6,885	8,071	44,856	76,250
All other nails incl. tacks	2,115	990	8,923	9,111
Pipes and fittings	10,747	14,504	76,672	117,230
R. R. spikes	1,566	703	6,215	10,933
Bolts, nuts, rivets and washers	4,341	1,846	20,053	19,383
Horseshoes	158	512	951	7,449
Cast radiators	289	215	2,137	2,049
Total	371,570	490,259	3,905,900	3,485,021

IRON AND STEEL IMPORTS, GROSS TONS

	January 1919	January 1918	Seven months ending January 1919	Seven months ending January 1918
Pig iron	1,852	1,492	14,926	34,631
Scrap	12,209	4,226	52,297	46,791
Bar iron	105	5	683	1,710
Ingots, blooms and billets	1,493	4,847	23,110	31,482
Structural shapes	26	880	1,912	6,542
Rails	435	822	6,270	6,343
Sheets and plates	67	108	396	1,018
Tin scrap	726	366	4,342	5,205
Wire rods	...	120	1,929	1,163
Total	16,913	12,475	105,871	134,885

Pig iron exports show an increase over the figures for December. January's shipments totaled 36,757 gross tons which is an increase of 12,180 gross tons compared with December. Exportation of scrap also showed an increase, but the figures remained unusually small at 632 gross tons. This however is a gain of almost 600 tons over December.

Imports of scrap, which showed a large increase in December, suffered a sharp reverse in January, the figures disclosing a loss of 8095 tons.

EXPORTS, GROSS TONS

1916	Pig iron	Semi-finished material
Jan.	19,319	55,315
Feb.	15,061	87,406
Mar.	19,439	107,675
Apr.	18,518	88,764
May	28,293	143,782
June	48,770	116,316
July	28,718	135,827
Aug.	60,264	160,921
Sept.	64,122	163,104
Oct.	92,756	162,669
Nov.	106,781	130,883
Dec.	105,195	162,901
1917		
Jan.	69,146	183,656
Feb.	49,018	131,566
March	69,629	193,469
April	44,783	162,209
May	61,112	168,158
June	83,406	190,907
July	32,305	106,085
Aug.	62,083	170,503
Sept.	44,287	148,932
Oct.	47,115	209,667
Nov.	25,733	150,120
Dec.	67,593	203,085
1918		
Jan.	20,581	195,385
Feb.	10,540	173,272
March	9,849	144,443
April	11,282	177,128
May	23,567	159,299
June	22,896	139,377
July	20,265	139,612
Aug.	26,022	189,851
Sept.	34,494	135,450
Oct.	35,452	125,023
Nov.	30,825	150,024
Dec.	24,577	63,890
1919		
Jan.	36,757	11,594

As a whole imports show a marked drop, while exports display a fairly good increase. With the growing European demand, and the releasing of merchant ships, which are still tied up in the transport service, exports are expected to keep on the upward path.

Pig iron is practically the only material on the list which shows an increase in imports, and this is so slight it is practically negligible. During the month total imports of pig iron were 1852 tons, which is an increase of 182 tons compared with December.

Awaiting Steel Decision

Development of Redfield Plan Depends on Action to be Taken by Iron and Steel Industry—Peek to Address Makers

WHETHER the Redfield price-suggesting plant will be put into effect shortly depends largely upon the decision of the steel industry at conference to be held at New York Thursday. If steel men favor the plan and agree to participate in it, officials here undoubtedly will put it in operation, but if industry declines to have anything to do with it, the opinion here is the plan will fail.

George N. Peek, chairman, has not made public names of committee nor program committee is expected to follow, but again expresses hope this can be done this week. Mr. Peek probably will attend the meeting Thursday. War service committees of the cement and brick industries met Mr. Peek and officials of the department of commerce and chamber of commerce today, but it is understood these conferences were simply preliminary. As far as could be learned price plan and net prices themselves were discussed.

Secretaries Daniels, Baker and Wilson, Roger Babson and other government officials outlined to the conference of governors and mayors what departments expected to do but practically all plans are upset by action of congress in adjourning today without enacting appropriate bills.

Following the meeting of the directors of the American Iron and Steel institute at New York, Feb. 27, Judge Gary stated that the amount of unemployment in the country has been greatly exaggerated and he said he thought he was justified in saying that the steel industry is in better condition than it has been reported in some quarters. When asked as to prices following the meeting, Judge Gary said that as far as he knew, they were being well maintained.

Pig Iron Contracts

May be Canceled by Ordnance Claims Boards—Data Sought

Active measures for the settlement of all outstanding contracts for pig iron are being taken by the ordnance department. Information relating to the contracts is being collected by J. H. Chambers, chairman of the price committee of the Cleveland ordnance district and who was recently chosen price adviser for the Cleveland, Detroit, Cincinnati, St. Louis and Pittsburgh ordnance districts. Blank forms are being sent to the price committees of the claims boards of the four latter districts for specific data which will be considered in formulating the department's policy in settlement of the contracts.

Ordnance officials are averse to settling the subcontracts on a basis of the market price of pig iron which prevailed when the orders were placed, declaring there should be some reduction.

Arrange For Settlement of Informal Contracts

Washington, March 4.—Elaborate detail for the settlement of informal war contracts in accordance with act recently passed by congress and signed by the President carried in supply circular issued today by purchase, storage and traffic division of war department. Copies of this circular have been mailed out to all manufacturers having informal contracts which here and abroad involve $2,800,000,000. Circular gives forms that must be filed with claims board in Washington of bureau with which agreements made. Manufacturers must file claims before June 30.

Claims are divided into two parts, classes A and B. The former is based on agreements made by officer or manufacturer under authority of the secretary of war, and nature, terms and conditions of which have been reduced to contract form or are otherwise established by written evidence. Class B consists of claims based on all other agreements covered by provision section one of act, covering all written or verbal agreements.

The Nonferrous Metals

Copper Lead Spelter Tin

	Copper	†Spot Straits, tin	‡Lead, New York basis	Spelter St. Louis basis	Aluminum	Spot antimony
Feb. 26	15.125	72.50	5.25	6.25	33.00	7.125
Feb. 27	15.125	72.50	5.25	6.275	33.00	7.125
Feb. 28	15.25	72.50	5.25	6.30	33.00	7.1875
Mar. 3	15.125	72.50	5.25	6.275	33.00	7.1875
Mar. 4	14.75	72.50	5.25	6.25	33.00	7.1875

†United States Steel Products Co.'s price to consumers, dealers and jobbers.
‡American Smelting & Refining Co.'s price.

NEW YORK, March 4.—The enactment of the bill validating war contracts helped stimulate sentiment in the markets for the nonferrous metals the past week, the trade looking to better business as the result of financial stabilization of many contractors. The metal markets made further progress last week in their readjustment to a peace basis, until now it is felt that they have largely discounted the changed conditions. Lead, in fact, the past two weeks has shown considerable strength, after touching a low point, with higher prices and good demand, following its sharp decline from 8.05c in November to 5c on Feb. 7. The American Smelting & Refining Co., leading lead producer, now is quoting 5.25c, New York, while independent sellers have been doing business as high as 5.40c, New York.

The situation in copper is not so cheerful. Stocks of copper are large and demand is far below normal. Yet there is a sufficient volume of inquiries for copper for immediate shipment to indicate that many consumers have been holding back on the declining market until their stocks have been exhausted. Yet copper has experienced a sharp scaling down, sales at 14.75c, f.o.b. refineries, being heard today. This represents a decline of 11.25c a pound since Dec. 31. The market has been quoted lately 15c to 15.25c. Export demand for copper still is very light and aside from a few sales by small producers outside the Copper Export association, little has been done. These small producers, incidentally, quoted a considerable concession from the 23c maintained as export price by the associated producers. Activity in the casting copper market is negligible, prices being marked down with the decline in electrolytic copper, until the current market for casting copper is 14.50c to 14.75c.

The spelter market has been almost lifeless, holding at 6.30c, East St. Louis, all positions, most of last week, but succumbing to selling pressure today, when 6.25c became the market. The market for brass special is around 6.35c to 6.40c, East St. Louis. Grade A spelter prices range from 7.50c to 8.50c, New York, according to seller.

The tin situation continues held firmly in hand by the tin administration, to the growing indignation of many consumers. The National Association of Manufacturers is reported to have endorsed the policy of the Tin Importers' association in its fight against the tin control. Domestic smelters of tin are quoting electrolytic tin 68c, 99 per cent 68c, f.o.b. smelter. The prices have gone up 1¼ cents in the past two days.

The market for antimony stiffened up a little last week, business being done in carload lots at 7.12½c, duty paid New York, and in jobbing lots at 7.25c, New York.

The aluminum market has been featured by few developments.

Malleable Plant Proves Versatility

Designed and Constructed for One of the World's Largest Malleable Foundries, This Great Establishment Adapted Without a Jar to the Successful Manufacture of Cast-Steel Anchor Chain

As recently as 1915 any deviation from the age-old method of hand forging large anchor chain was a decided innovation. Unexpected exigencies at that time led the Boston navy yard to substitute steam forging hammers for the sledge swung by brawny backed smiths, familiar since the days when Vulcan plied his trade. The tribulations attending the substitution of machine for man power in welding the links were fully recounted in THE IRON TRADE REVIEW, Jan. 6, 1916. Successful application of heat treatment overcame those difficulties and made possible the manufacture of chain upwards of 2 inches in diameter to supply the navy's three-year program.

With the unprecedented demand for shipping, familiar through the period of the war but more acutely within the past year, the lack of anchor chain manufacturing capacity would have constituted a serious limit on the ability to deliver fully equipped ships, had not the conventional methods of production been jettisoned. Anchor chain is as essential to a vessel at sea as a brake to a railroad car. Both constitute the main dependence in time of imminent danger. The requirements of the Emergency Fleet corporation were so enormous that to supply chain in sufficient quantity would have engaged the chain forging capacity of the entire country for a number of years yet to come. In the emergency wrought iron, the dependable medium for ages, yielded to steel, and forging gave place to casting. The foundry took up the burden which the forge shop found too heavy to carry. It is yet more remarkable that this innovation, the first pre-eminently successful experiment in the quantity manufacture of cast-steel chain, was effected by a company renowned more for its malleable products, though not a stranger to steel production.

The National Malleable Castings Co., Cleveland, was the pioneer in the cast-chain industry. After months of research and experiment, a process was developed whereby chain is cast which meets the rigid requirements of Lloyd's and the American Bureau of Shipping. Fortunate in the possession of its new and modern Woodhill road works this company concentrated upon this most-needed marine product. The Woodhill road plant was designed and equipped originally for the quantity production of malleable castings by what is known as the Kranz triplex process, involving the use of cupolas, converters and electric furnaces. This process was described in THE IRON TRADE REVIEW, April 5, 1917. The complete melting equipment available made the plant readily convertible.

One unit of its huge flexible units was at once switched to chain manufacture. This unit has attained an output of from 25 to 30 tons of chain per day. Had the war gone on the intention was to place other sec-

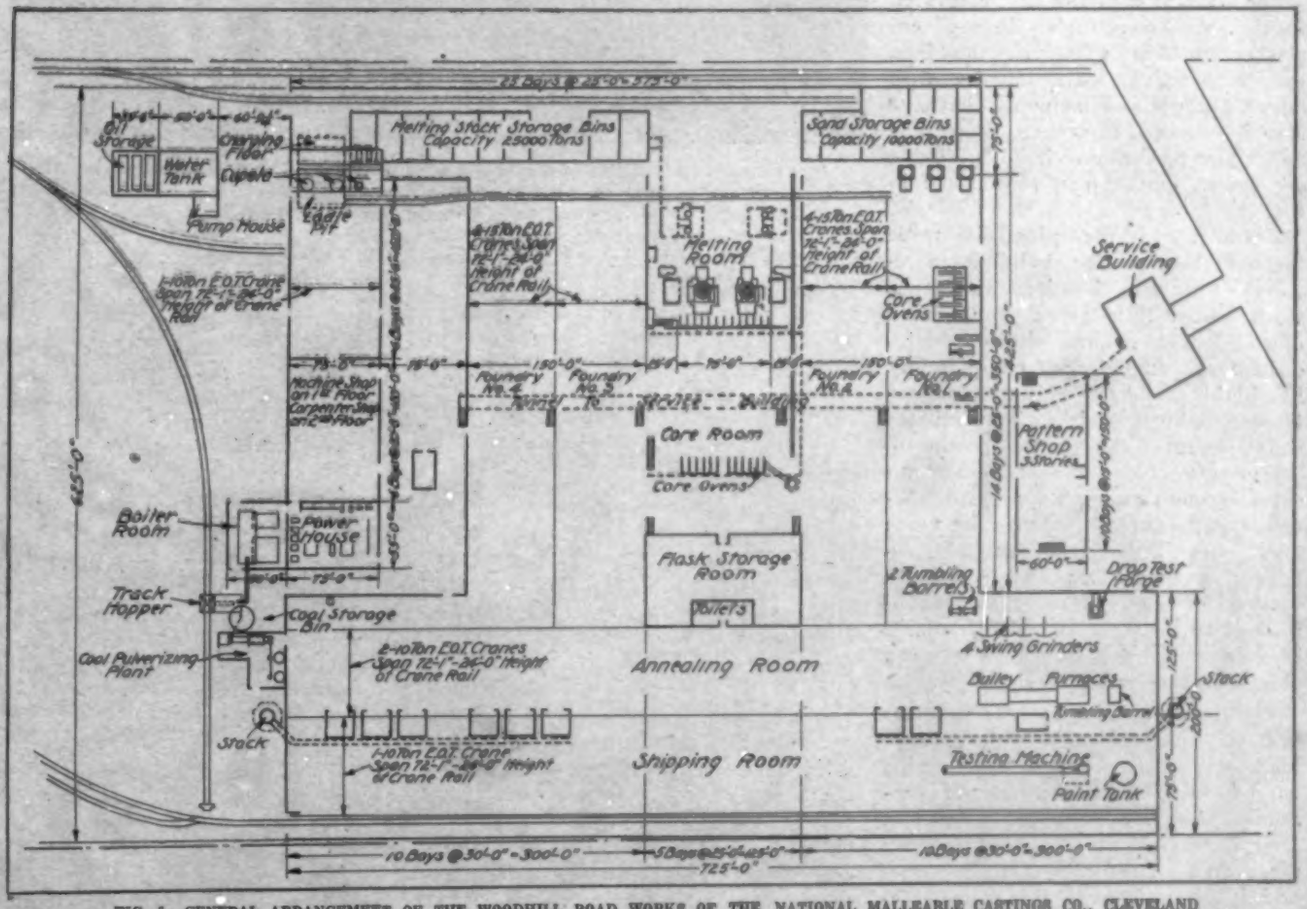


FIG. 1—GENERAL ARRANGEMENT OF THE WOODHILL ROAD WORKS OF THE NATIONAL MALLEABLE CASTINGS CO., CLEVELAND

FIG. 2—AMPLE SCRAP, PIG IRON, COKE AND SAND STORAGE IS PROVIDED IN A SERIES OF BINS LOCATED ALONG THE ENDS OF THE SEPARATE FOUNDRY FLOORS

tions of the shop in action until finally this one plant would have completed 100 tons of cast-steel anchor chain per day. This would have meant a mile of 2¼-inch chain each 24 hours. A description of the plant will make clear the facilities which were at hand.

The group of buildings embraced within the company's 32-acre enclosure include a service building, pattern building, main foundry with huge storage and shipping bays, a machine shop, carpenter shop, and boiler and powerhouse building. These are shown in the plan reproduced in Fig. 1.

Entrance to the plant is made through the service building, a 3-story structure housing the time clock lobby, time office, employment office, locker rooms, shower baths, dispensary, and large club rooms. From this building, a 10-foot tunnel, amply lighted and well ventilated runs beneath the entire group of buildings. This tunnel communicates through stairways with the different departments, so that workmen may pass and repass without endangering themselves or creating diversion of interest on the part of others at their work. This tunnel is viewed by the management as a most effective safety device.

The pattern building which comes next in the group is three stories high, of steel skeleton construction with brick walls, concrete and subfloors. As may be noted from Fig. 1, it is 60 x 150 feet. The first floor is devoted to plant offices. The second is given over to the pattern department of this plant alone; while the third floor is occupied by a second pattern department which makes coupler patterns for the other plants of the company located in various parts of the country.

FIG. 3—TWO LARGE BESSEMER-TYPE CUPOLAS WILL COMPLETE THE FIRST STAGE OF THE TRIPLEX PROCESS OF MAKING MALLEABLE IRON—THE SMALLER CUPOLA WILL PRODUCE GRAY IRON FOR ANNEALING POTS

World's Largest Single Foundry

The main foundry building is roughly 625 x 725 feet. In this huge structure, said to be the largest single foundry unit in the country, are contained all the operating departments of the plant. Roughly the arrangements may be compared to a Roman numeral, with storage and shipping departments extending the full width, forming the base and top of the figure, and the vertical bars consisting of foundries Nos. 1, 2, 3 and 4 divided into pairs by the area which contains the coreroom, electric furnace and converter department, and flask storage. The building is built according to the best modern foundry practice. Steel frame construction, with the roof carried 35 feet above the floor, ventilating windows, and liberal lighting all contribute to sanitation and comfort. The windows alone in this monster foundry total over 3½ acres of glass, while the entire floor area approaches 10 acres. The outer walls are of brick built up about 24 feet on all sides while the Aken type roof is made of concrete slabs. Overhead cranes, built by Pawling-Harnischfeger Co., Milwaukee, cover the work in all the different departments.

As was noted, the storage department extends the entire width of the building, along the railway siding. This storage bay is roughly 75 x 575 feet. A receiving track adjoins a series of storage bins for coke, pig iron, scrap and other melting stock at one end of the storage area and at the other end adjacent to foundry floors Nos. 1 and 2 are similar bins for sand. These nine concrete storage compartments of various sizes are 20 feet deep and provide a melting stock storage of 25,000 tons. The sand storage will accommodate 10,000 tons. The coke bins will hold 3500 tons.

A track runs along the top of the storage bins for fuel and melting material, crossing a weighing scale as shown in Fig. 2. This track is 8½ feet above the main floor level. At one end of the track, and 22 feet above the foundry level is the cupola charging floor, shown in Fig. 3. The location of the cupolas is indicated in the shop plan, Fig. 1.

Cupola charging cars of a special hopper type will be used in handling materials from the storage bins. These

cars have a capacity of 2500 pounds. They will be loaded at the bins, and either elevated to the charging floor by the crane commanding the storage bay, or else will be run up on an inclined trackway, not yet constructed. At the charging floor, tracks are provided on continuations of the lines of the two tracks along the front of the bins. The charging floor tracks have turntables and intersecting lines which will allow the cars to be run to the cupolas independently and simultaneously if desired. The trays on the cars are hinged in such a manner that an air hoist at the back of each of the cupolas may engage recesses at the back and tilt the hoppers directly into the charging doors. The cupola charging floor is 37½ feet by 75 feet, rigidly constructed of reinforced concrete on a steel frame and paved with wood blocks.

FIG. 4—TWO HEROULT TYPE FURNACES PROVIDE THE LAST REACTION IN THE PREPARATION OF MALLEABLE BY THE TRIPLEX PROCESS—THESE HAVE MELTED MORE THAN AMPLE METAL FOR THE ANCHOR CHAIN REQUIREMENTS

Large Melting Capacity Provided

As may be noted in Fig. 3, two of the three cupolas are of the bessemer type. They are 108 inches in diameter, tapering to 72 inches, and are lined with a 26-inch wall directly above the tuyeres. This gives a diameter of 56 inches at the melting zone. The distance from the bottom of the columns to the top of the stack is 65 feet. The height from tap hole to charging door is 27 feet 6 inches, giving an exceptional charging capacity and greater economy. Twelve tuyeres supplied through a 15 x 36-inch wind box are provided. Each wind box is served through two air lines. With an ordinary thickness of lining each of these cupolas would melt about 25 tons of metal per hour. With the extra heavy lining the output will be 12½ tons per hour. This capacity will provide hot metal for the entire plant, which will require about 300 tons per day. This would figure out about 150 tons of finished castings per day on a basis of 50 per cent yield. It is the intention when operating on iron for malleable casting to run one cupola continuously for a week, and then switch to the other while relining.

FIG. 5—MOLD SECTION FOR SEPARATE LINKS

Small Cupola for Pots

The smaller foundry type cupola, shown at the right in Fig. 3 will be used to make iron for annealing pots. This is an ordinary 63-inch cupola. The cupolas all were built by the Whiting Foundry Equipment Co., Harvey, Ill. All three units receive their blast from a common air line.

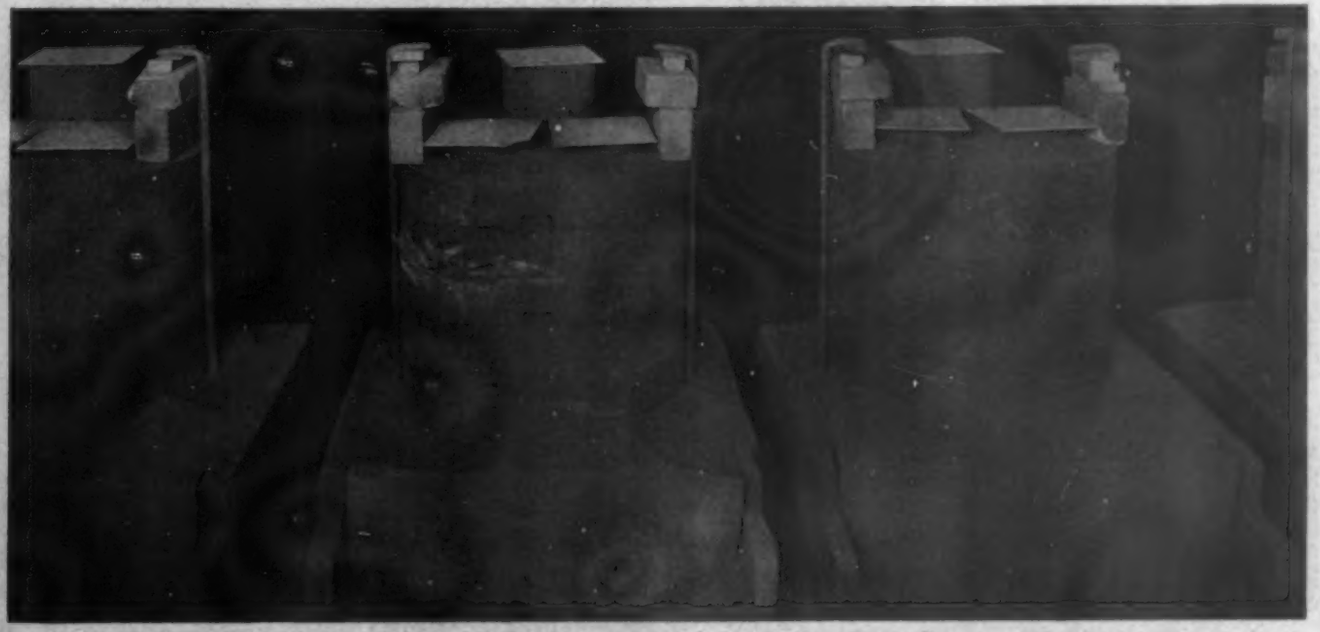


FIG. 6—SEPARATE MOLDS SHOWN IN FIG. 5 ARE ASSEMBLED IN SERIES OF FOURS, THE SEPARATE HORN GATE BEING CONNECTED THROUGH THE BOTTOM OF MOLD BY TWO RISERS

FIG. 7—TWO BATTERIES OF FIVE OVENS EACH GIVE LARGE CAPACITY WHICH IS INVALUABLE IN BAKING THE DRY SAND CHAIN MOLDS—ELECTRIC BATTERY TRUCKS HANDLE THE RACKS INTO AND OUT OF THE OVENS

Two positive pressure blowers, built by P. H. & F. M. Roots Co., Connersville, Ind., are housed in an enclosure beneath the charging floor. These provide blowing air for the three cupolas.

Slag from the cupolas will be removed in 4-ton ladle cars. The iron ladles from the cupolas will be lifted by a crane and set upon a track which runs parallel with the storage-bin track but at the foundry floor level. From this point they will be shunted along to what is termed the melting department. Track scales will provide an accurate record of the difference or loss at this stage of preparing the metal.

In the portion designated as the melting department, there are at present two 15-ton heroult furnaces, which will be described later. In addition, two 2-ton, and two 6-ton side blow converters have been installed. In the scheme for manufacturing malleable iron, it is the intention to take two tons of metal from the large cupola in service, send it to the melting room, and blow it in one of the 2-ton bessemer converters. While this is in progress, additional metal will be tapped from the cupola until the cupola ladle contains about 10 tons of metal. This then will be sent to the melting room where the two tons from the converter will be added, giving the mixture the desired carbon and silicon content. This mixture then will be further refined in one of the electric furnaces. The result will be the alleviation of conditions obtaining through too high carbon, silicon and manganese.

This melting room equipment makes plain the facility with which the plant was directed to the purposes of steel-

FIG. 8—ONE OF THE TWO 15-TON ELECTRIC FURNACES POURING ITS HEAT

FIG. 9—THE INDIVIDUAL LINKS ARE PLACED WITHIN CONNECTING MOLDS. TWO SHOTS OF CHAIN SIDE BY SIDE ON THE CONCRETE TABLE, AND THE INTERMEDIATE LINKS ARE THEN ALL CAST SIMULTANEOUSLY—NOTE THE GATING TO THE STUD OF THE CONNECTING LINKS

FIG. 10—THE GRINDING LAYOUT PROVIDES A RAPID MEANS FOR FINISHING EVERY SURFACE IRREGULARITY OF THE LINKS BEFORE THE CHAINS ARE HEAT TREATED—THE WINCH SHOWN PULLS THE CABLE TO WHICH THE CHAIN IS ATTACHED AROUND THREE DRUMS, CONSERVING THE LENGTH OF FLOOR ENGAGED

chain manufacture. In this case, the cupolas and converters, which have not yet been placed in operation were not needed. The two heroult furnaces provided the necessary capacity for the chain work, as they melt four or five charges of cold scrap per day.

The two electric furnaces are identical. The outer shell in each case is 13 feet, 6 inches in diameter. Three 12-inch electrodes are used. Thirty heavy copper lead cables deliver current from the 3000-kilovolt-ampere transformer which is housed at the back of each furnace. Special type hollow tube conductors are used in place of the usual bus-bar arrangement. These tubes which effect a two-thirds saving in copper over the usual type conductors are supplied with cooling water which maintains a low temperature. The electrodes are automatically fed down as the charge is melted. As may be noted from Fig. 8, the furnace is tilted on an axis located at the front. The tilting control is electrically driven through gears.

Hot metal from the melting department may be shunted on ladle cars in

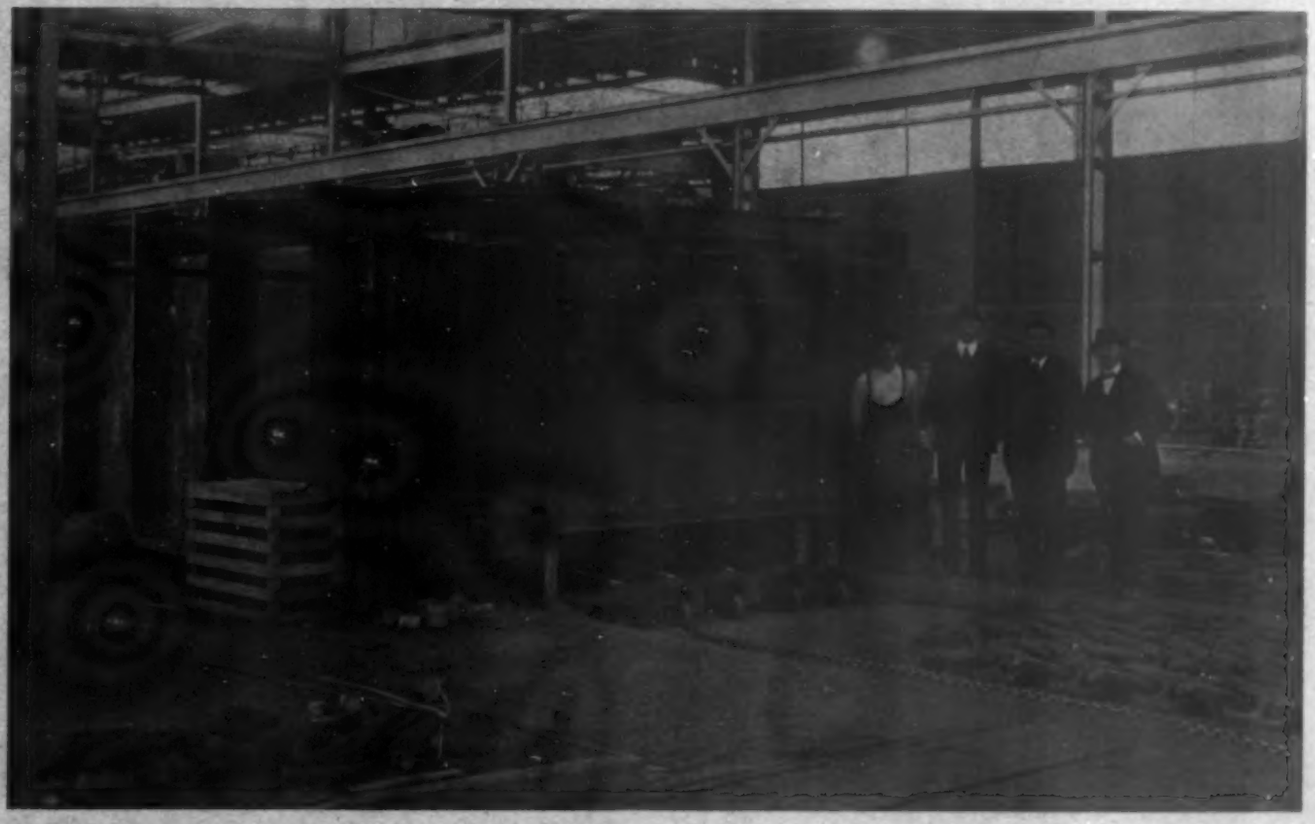


FIG. 11—THE TWO ELECTRIC HEAT-TREATING FURNACES ARE SIMILAR IN CONSTRUCTION—THE FIRST OPERATES AT A HIGHER TEMPERATURE, AND FROM THIS UNIT THE CHAIN IS DRAGGED INTO A TANK OF WATER AND QUENCHED—IT THEN IS RAISED TO A DRAWING HEAT IN THE SECOND UNIT

either direction to a point where it can be handled by the cranes commanding each of the different foundry floors.

In the same section of the building with the melting department, the original scheme contemplated a core room, and at the far side of this core room, two batteries of five ovens each were built. These fitted admirably into the chain manufacture for baking the dry sand molds used. The core ovens are 5 x 15 x 7 feet, and each division will accommodate two racks of cores. The racks are handled by elevating platform trucks as shown in Fig. 7.

Communicating with the coreroom and almost in the center of the building is a 4-story structure of steel and concrete with stairways and elevators. This will be used for storing molding machines, flasks, boards and other foundry floor supplies. The general plant storeroom occupies the first story of this inner building.

At the present time only foundries No. 1 and No. 2 are in use, and these are devoted to molding and casting anchor chains. Eventually along the dividing walls between the foundry units, stalls 10 feet wide will be built. These will provide a series of molding floor units each 10 x 35 feet. Each entire molding floor will provide space for 70 molders per turn.

Hot metal from the melting room will be delivered by 7-ton ladles. From these it will be poured into bull ladles for the casting operations.

At the eastern part of the main building and reaching across the ends of the different foundries, similarly to the storage department, is the annealing department. This occupies a space 75 x 725 feet, and forms the last step in the sequence of operations through the plant. Just outside the annealing room and in the same bay is the shipping department, 100 x 725 feet with railway track space for from 18 to 20 cars is provided to ship the malleable castings which started in the opposite side of the foundry as raw material, and finished their progress in the annealing ovens. At present only two batteries of eight annealing ovens have been constructed at one end of the wing devoted to this purpose. The space is ample for 24 in all to take care of all the work which the foundries can produce. Each of the present ovens has a capacity of 40 tons of automobile castings contained in 104 stacks of pots placed four high. The ovens are 20 feet wide and 25 feet long. They are insulated by 4½ inches of special silica brick. The floors of the annealing and shipping departments are paved with wood blocks and electric trucks will be used to place the pots in the furnaces and remove them.

The boiler and powerhouse adjoins the main foundry but is a separate brick and steel structure. The boiler-room equipment includes three 350-horsepower Connelly water tube boilers with Murphy stokers. A steam blower ash removal system discharges the ash from the pits beneath the boilers into a concrete tank outside the building, in the manner familiar in marine boiler installations. From this point a yard crane places the ashes in cars for removal. A complete coal crushing plant furnishes fuel for the boilers and for the malleable annealing furnaces. The boiler plant is used for heating purposes only. The entire plant including the mammoth main foundry building is heated by the forced circulation of hot water through pipes placed along all the walls. The magnitude of this heating system will be appreciated from the fact that over 50 miles of 1½-inch pipe were required in the main foundry building alone for radiation. In the powerhouse are heaters, pumps,

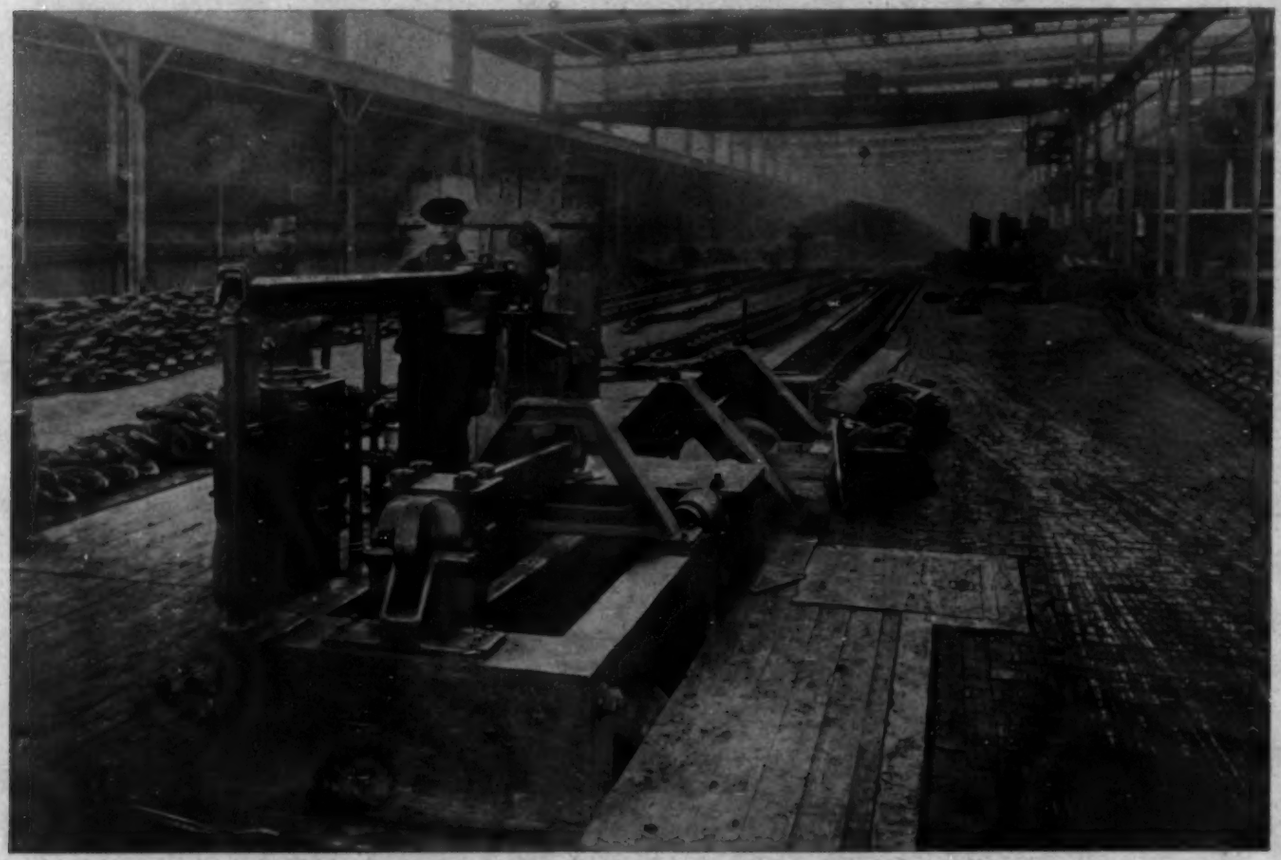


FIG. 12—THE COMPRESSION MEMBERS OF THE 700,000-POUND TESTING MACHINE ARE SECURED IN CONCRETE AT THE SIDE OF THE PIT IN WHICH THE CHAIN IS PLACED—THE ENTIRE SHOT IS GIVEN A PULL OF 235,000 POUNDS AS A PROOF TEST SUPPLEMENTARY TO THE JERK AND STATIC TESTS OF A TRIPLET OF LINKS

etc., for the heating system, and also the electrical equipment required to drive the air compressors for the converters and foundry floor use.

Electric power for the plant including that used in the furnaces is obtained from the Cleveland Electric Illuminating Co. All wires within the plant are contained in conduits radiating underground from the power house. All subdivisions of power and light throughout the plant are metered to provide an accurate distribution of cost between departments. Six miles of fiber conduit are in use underground and 12 miles of metal conduit are required in the leads above ground.

The preceding description has referred mainly to those portions of the plant which were designed primarily for the production of malleable-iron castings that will form the ultimate output. When anchor chain contracts were undertaken, the melting units were available to produce steel from scrap. The company previously had made locks and knuckles for car couplers and experiment demonstrated that this steel was suited in strength and toughness to resist the stresses encountered in anchor chain. Cast chain was acknowledged to be more regular in strength and contour than even the best forged chain. The difficulty lay in devising a molding method which would cast the links together, provide the necessary stud, and lend itself to quantity production.

The problem finally was solved by casting separate links, then placing these in connecting molds and casting other links around them. The molds for the separate links are made in sections in the manner shown in Fig. 5. As may be noted these sections are dowled, to hold them against lateral thrust. These sections are built up in the manner shown in Fig. 6, into molds holding eight links each. A separate horn gate is connected through the bottom of the mold by two risers. The eight links as they come from the mold are shown in Fig. 4.

Model Layout for Connecting

The eight-link castings are broken apart, the links are ground, and then placed in the connecting molds for pouring the intermediate links. The intermediates are poured through straight gates connecting to the stud of the link. To keep the work off the floor, and enable the workmen to handle the assembly of the connecting molds with greater speed and convenience, two pairs of concrete tables were constructed running in opposite sides from the aisle connecting the No. 1 foundry with the coreroom. These tables are 24 inches high, and about 30 inches wide. They are built of heavy reinforced slabs that provide sufficient strength to hold the entire *shot* or 90-foot length of chain and the connecting molds. The molds are all made on jolt-ramming, roll-over, pattern-draw machines manufactured by the Cleveland-Osborn Mfg. Co., Cleveland.

After the connecting links are poured, the entire chain is lifted by the foundry crane, engaging the main hoist hook at a point one-quarter distant from one end and by the auxiliary hoist one-quarter of the length of the chain from the opposite end, so that the chain swings clear in four loops and does not drag across the foundry floor. The entire chain is dumped at one end of the foundry floor, and the gates and fins are knocked off. It is then placed in one of the two tumbling barrels shown near the swing grinders in Fig. 1. These were built by the W. W. Sly Mfg. Co., Cleveland. After tumbling the chain is laid out along the trackway made of iron plates shown in Fig. 10. The elevated sections of this track bring a portion of the chain directly under the two swing grinders, as it is dragged along by a winch and cable wound around three drums as indicated. As the different links come up on the elevated portion before the grinders, they are turned by a bar so that the grinder reaches any desired place on the link surfaces. Two other swing grinders, commanding semicircular racks in which the links are placed are used to grind the separate links before intermolding the others.

Heat-Treating Electrically

Following the grinding, the shot of chain is taken to the floor before the first of a pair of Baily heat-treating furnaces shown in the lower right corner of the shop plan, Fig. 1. Here four hooks engage the shot in eight loops. The bar to which these hooks are attached is connected to a cable which runs through the furnace to a winch, so that the shot of chain is dragged into the furnace, but the hook rigging is outside the drop door on the opposite end. The furnaces are electrically heated with full pyrometer control. Each shot of chain is subjected to a slowly rising heat until the necessary temperature is reached, which is in the neighborhood of 900 degrees Cent. It is then pulled through the first furnace, and into a 10 x 40-foot tank filled with water. Another winch and cable then draws the shot up an incline and into the second or drawing furnace. This furnace is shown in Fig. 11. The scale which is plainly noticeable on the chain in the foreground is removed by tumbling in another barrel located directly ahead of the drawing furnace.

The chain is now ready for inspection and test by representative of both Lloyds and the American bureau of shipping. Both static and dynamic tests are applied. A Reihle type horizontal hydraulic tension machine is used for the proof test. This machine was constructed by the National Malleable Castings Co. within its own shop on drawings furnished by the testing machine manufacturers. It has a capacity pull of 700,000 pounds. Each shot of chain is represented by three links selected by the inspectors and cut out. This triplet is subjected to a jerk test consisting of three blows on a drop machine similar to the standard Master Car Builders type but with a heavier anvil and tup. The 3000-pound tup is dropped from 8 feet, 9 feet and 10 feet successively in this test. The same triplet then is subjected to a static test on a vertical testing machine, being subjected to a 400,000-pound pull. The entire 90-foot shot then is placed in the horizontal machine shown in Fig. 12 and subjected to a proof load of 285,000 pounds.

Final Inspection

The shipping department crane then places the shot alongside a pit where it is given a dual and most minute surface inspection. It then is looped over a short length of timber and the entire shot is immersed in a tank of asphalt paint. The chain is then ready for shipment.

The steel chain output of this versatile malleable plant at present is 13 shots of 90 feet each per day, or 1500 feet. Each shot weighs about 4300 pounds. This output will be continued throughout the present year at least, though the other foundries which go to make up the great Woodhill road works will probably be turned to malleable production as was originally intended.

Industrial Chemists Open Laboratory

The Industrial Chemical Service Co., 185 Madison Ave., New York, has been organized by Dr. Maurice Aisen and Walter F. Dumser. An extensive laboratory is now being equipped near New York and fitted out for the technical study of manufacturing problems. Dr. Aisen, who is vice president and technical director of the company, is a research and industrial chemist with an European education and over 10 years American experience. Mr. Dumser, who is commercially trained, is president of the new company. The Industrial Chemical Service Co. expects to specialize on problems connected with the development of nonferrous alloys, coke-oven by-products, nitrogen fixation, and kindred lines. The company aims to develop new processes from the laboratory to the manufacturing stage.

A Few of Germany's Technical Plans

Several Branches of Engineering in Germany Make Headway in Standardizing Products—Copper Shortage is Acute—Results of Forced Research for Substitute Materials—Americanizing Their Iron Industry

At present the world is interested in the actual internal situation in Germany. THE IRON TRADE REVIEW has made a special research of technical publications and reports which have been issued in Germany since the armistice was signed. Some significant statements covering Germany's post-war engineering and industrial plans and ambitions have been culled from these reports and are grouped below. One of the items tells in a clear and concise way to what extent the Germans carried on research work during the war. Other items refer to the outlook of business in that country now, the shortage of copper, etc.

* * *

A movement for standardizing German engineering products is making steady progress. Recently at Vienna, at the instigation of the society of engineers and the ministers of war and public works, a committee was formed to carry out the proposed regulations in the several branches of engineering. The subcommittee appointed to deal with tools, screws, pipes, ball bearings, bolts, and gear teeth have held numerous sittings, and have reached conclusions with regard to those objects of engineering manufacture. Locomotive construction is now under consideration. The scope of the standardizing movement is being extended to canal structures, and to shipbuilding. The advantages of an all around standardizing of engineering products have been made impressively evident by the war conditions through which European industries have passed. An appeal is made for state help to carry into effect this comprehensive standardizing scheme.

* * *

Shortage of copper in Germany and Austria has led to the manufacture of electric machines with aluminum and zinc windings. It is to be expected that copper will continue to be scarce for a long time and on this account a comparison of the design of machines with substitute windings is of interest.

The machines in question are transformers, direct-current generators and motors, synchronous generators with salient poles, and induction motors. In each case the magnetic frames are the same as for machines having copper windings forming the basis of comparison, and that the temperature rise is the same as in the copper machines. The substitute transformer is the most satisfactory of all these machines, and the substitute induction motor presents the most unfavorable problem for solution. Tables and curves were presented for each type of machine from which a rapid comparison was made of the weights, losses, efficiency, rating, voltage drops, speeds and principal electric constant of the machines with windings of the three metals in question. In the case of the induction motor three different designs were prepared for each of the substitute types, one for equal voltage, or magnetic saturation; one for equal Joulean losses, and one for a motor with increased saturation, so as to obtain the most favorable values for the power factor and overload capacity.

* * *

Samples of war-time raw materials now on exhibition in Berlin give a clear and highly suggestive picture of what has been accomplished in the forced search for substitute materials. These samples cover a wide field of research. In the first rank stand the metals. In the last year of peace Germany used copper to the value of $114,000,000. Of that quantity only one-tenth was produced from ores mined in the country; nine-tenths, amounting to $102,000,000 in value, came from the United States. Also, the greater part of the rarer metals, nickel, tin, manganese, wolfram, chromium, and lead, were imported.

Good substitutes for copper and tin alloys were found in zinc alloys. Zinc exists in abundance in Germany. Today these high percentage compounds are satisfactorily replacing brass for many uses. As conductors of electricity, zinc wires are being used. Zinc has replaced tin in a large degree for machine bearings. Where before the war metal for bearings contained from 70 to 80 per cent tin, now either that percentage has been reduced, or zinc has wholly taken the place of tin in the alloy. In some cases an alloy of calcium and lead has been used. For pewter for soldering cadmium is a perfectly satisfactory substitute. The rubber shortage has been met by the use of regenerated and synthetic rubber, either alone or, where necessary, in combination with the genuine material. Also it was with a feeling of relief that Germany learned during the war that asbestos in large quantity had been discovered in Bulgaria. In the matter of sulphur, Germany made herself independent of Sicily by an artificial production of that substance. If no wholly satisfactory substitute for leather was found for shoes, good machine belts were produced from paper-pulp, hair, or steel.

* * *

A large Berlin factory has carried out tests, at the request of the war department for raw materials, to determine the amount of loss in the transmission shafting installed in its works. There are 25 lines of shafting driving groups of machines. The first measurements showed that the losses amounted to 165 kilowatts in shafting that drove 250 kilowatts at full load. After several months the losses were found to be 153 kilowatts with an increased load of 310 kilowatts. The losses in the shafting amounted to 25 to 66 per cent of the average full load. It is calculated that the loss per meter of shafting was 150 watts. It is important that continuous observation should be made of shafting losses, so as to be in a position to take suitable steps to minimize them.

* * *

The general meeting of the German Iron Founders' association, at Berlin recently, revealed a state of nervous tension in the iron industry. The outlook has become clouded. The expectation of an immediate abundant supply of rich ore from the western frontier has not been realized. One effect has been to dispel the hope of a speedy capture of the Ukrainian markets, for not only will production be seriously restricted for a long time, but the quality of the produce will leave much to be desired. Moreover, the cost of production will be high. In the opinion of one of the speakers at the Berlin meeting it is of vital importance to the German iron industry to gain a footing in what he described as the liberated portion of the former Russian empire, as well as the half-freed lands on the eastern frontier. But fears were expressed

that in the future Germany may have to meet Austrian competition in those lands. This altered distribution of the iron trade is becoming a vital question in the reconstruction of German industries.

* * *

At the recent general meeting of the German Iron Founders' association held in Berlin, the opinion was expressed, and generally approved, that only by Americanizing the German iron industry, that is to say, by concentrating it in a few large works, can it be made capable of surmounting the difficulties of the changed circumstances, the radically altered conditions, into which it is coming. American experience has shown that in concentration there is strength to resist and power to compel. All forms of industry are tending to concentrate themselves in large works.

Unique Blow Torch Gives High Temperatures

Devised to fulfill the need for a portable high-temperature blow torch, the unit shown in the accompanying illustrations has been developed to meet a wide range of uses. This apparatus, which is manufactured by the North American Mfg. Co., Cleveland, employes a simple method for producing the pressure and mixture necessary for high temperature combustion of gas or oil fuel. The device consists in effect of a mixing chamber, motor-fan, delivery pipe, and nozzle. Flexible tubing supplies gas from the line, while a lamp socket connection and drop cord deliver current to the machine. A small electric motor-fan draws air into the mixing chamber where it meets and is mixed with the gas. This mixture then is impelled by the fan through a delivery tube to a specially designed nozzle, where it burns at high temperature. The action in the apparatus is similar in effect to that secured in a bunsen burner, with the added velocity and volume of the mixture contributing a higher temperature to the flame.

A floor stand with a vertical post is provided. The torch is mounted on this post by a sleeve secured with a set screw, so that the entire unit may be moved vertically or radially about the central post. In this manner it may be brought to bear upon the work at hand.

Among the uses to which this torch is suited are ladle heating, heating for forging, preheating for welding, skin drying molds, heating rivets or small parts, applying heat to sections or pipes for bending,

FIG. 1—GAS TORCH EQUIPPED WITH ELECTRIC-MOTOR DRIVEN FAN MIXING SYSTEM

soldering and in removing insulation from electrical equipment. The flame supplied by the ordinary burner is several feet in length. A supplementary burner, which may be attached readily, supplies a flame about 10 inches long where a localized heating effect is desired.

The gas consumption for this torch is said to vary from 18 to 52 cubic feet per hour with artificial gas. A special burner is provided in case it is desirable to use oil for fuel.

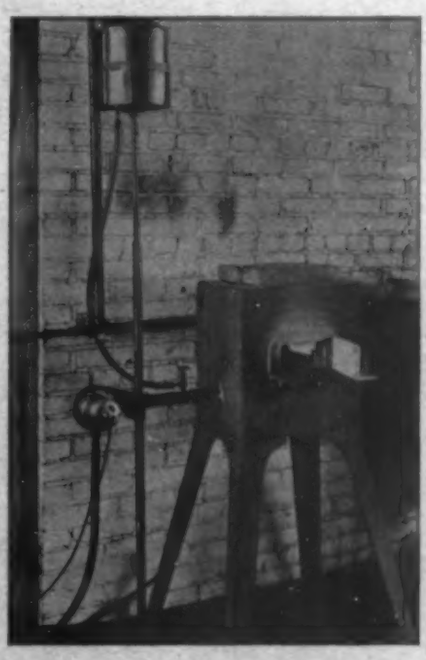


FIG. 2 — PORTABLE GAS-ELECTRIC TORCH EQUIPPED WITH SPECIAL CONNECTION FOR OPTIONAL USE OF OIL FUEL

The company recently has developed a larger burner on the same general plan as that described. In this unit a motor fan unit is installed so that its impelling blades deliver directly to a supply line running to the torch. At one side of the fan is a central intake from the gas supply line. Opposite to this is the air intake with a diaphragm opening which may be rotated to control the air supply. A special nozzle is used which has an air regulating valve. This latter is for use in event that the supply of air is delivered from one fan to several nozzles, and it is desired to cut down the supply to any one of them. The blower delivers the mixture of gas and air at about 4.7 ounces pressure, but will operate up to one pound pressure. The gas consumption for this unit, it is said, is 550 cubic feet per hour for natural and 800 cubic feet per hour for artificial gas.

Special burners also are manufactured by this company for use with fuel oil. These are in effect atomizers, supplied with air through the fan unit described previously. In this case air is secured at both sides of the fan and forced through to the nozzle. A small positive action rotary pump driven by a motor receiving power from a lamp socket is supplied to deliver the oil fuel under pressure. This pump is rated at 90 gallons per hour. Each of the oil burners described is designed to consume only 3½ gallons of oil per hour.

The larger gas burner, and that for fuel oil, are designed for core or annealing oven work, and for long continued operation. The rush of air into the motor fan unit is devised to keep the motor cool for steady use in units of this class.

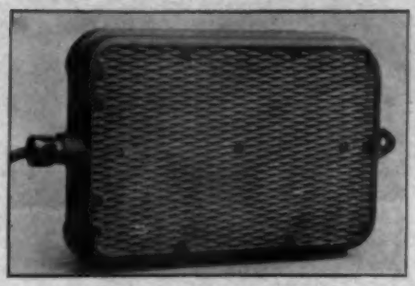
Provide Foot Heater for Outdoor Service

There are several ways of increasing the efficiency of a plant—by the use of labor-saving machines, changes in process of manufacture, proper routing of materials and by increasing the ability of men to do better work. Although a great deal of money has been spent to increase the efficiency of labor employed in plants, little has been done to increase the efficiency of the man who must work out-of-doors. In cold weather men employed outside in exposed positions, such as crane oper-

ators, etc., cannot secure sufficient exercise to maintain sufficient comfort.

To increase the efficiency of men employed in such positions, an electric foot heater has been designed by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

The heater, which is shown in the accompanying illustration, is 14 x 20 inches. It is 2½ inches in height, and is constructed either of cast iron or copper. The surface is diamond threaded and feet are provided at the corners to raise the heater one inch above the floor. The heating unit is clamped against the under side of the main casting by a sheet steel clamping plate and a bottom sheet steel plate, sealed with waterproof gum, covers the heating element. By means of a 3-heat control snap switch, 200 watts are obtained on high, by connecting the two equal circuits of 100 watts each in parallel. By the use of one circuit only 100 watts are obtained on medium, while by using two circuits 50 watts are obtained on low.



FOOT HEATER EQUIPPED WITH A 3-HEAT CONTROL SWITCH

Gage Testing Plans Are Far Reaching

THE senate recently passed the legislative, executive and judicial appropriation bill which carries $40,000 for the standardization and testing of gages by the bureau of standards for the fiscal year 1920. This is from $60,000 to $110,000 under the amount desired by the bureau for furthering this work which proved so valuable during the war, but the amount authorized, which has also been voted in the bill as passed by the house of representatives, will enable the bureau to operate the Cleveland laboratory, and possibly the one in New York, as well as carry on the work at the bureau's plant here. Any additional funds which may be provided by congress to enable the bureau to expand this work now will have to come through deficiency appropriation by the next session.

Congress, and many manufacturers for that matter, have not been fully aware of the scope of the work being undertaken by the gage section of the bureau. An outline of the gage-testing apparatus improved, of the new methods developed, of the apparatus now under development and of the investigations the bureau hopes to undertake in the future gives a comprehensive idea of the work of this section which is under H. L. VanKeuren.

A projection lantern for measuring thread form and profile gages was designed and developed by the bureau as an improvement over that of National Physical Laboratory of England. This improvement permits one operator to control the latern and the gage and to examine the projection shadow. An improvement was made in the optical lead testing machine originally designed by the English laboratory, the change including an especially accurate micrometer head and a device for measuring the lead of ring gages. The Hoke precision gage disc was designed as an improvement over the Swedish gage and improvements were made in several devices and instruments for measuring radii of profile gages and in the form of a balanced micrometer holder for making effective the diameter measurements of thread gages.

Use Light-Wave Interference

Among the new methods developed was the simple means of measuring the effective pitch diameter of taper pipe thread gages by using three wires. The use of the light wave interference method for making comparisons and for testing the flatness and parallelism of the surface of flat end standards also was established. The gage section also developed the application of the sliding taper parallel for measuring snap gages and the use of a mechanical indicator for testing plain ring gages.

The bureau now is improving, for installation by manufacturers, a simplified projection lantern, having the advantages of a short screen distance which may be used to inspect the plants product as well as gages. An investigation is being made of the use of a 3-wire method of measuring thread angles and of a device for measuring the effective diameter of thread ring gages. To simplify construction and to make it more rapid in operation, the present lead testing machine is now being improved. The bureau is also further improving the balanced micrometer holder, for making effective the measurements of thread gages, in order to make its construction more economical, but incorporating the same principles.

To Do Field Work

Men will be placed in the field, according to the plans of the bureau, to investigate the gaging systems already in use in manufacturing plants and to assist in the inauguration of systems of inspection by means of gages in plants where such a system may be desirable but is not already in use. The service of the gage section would be valuable in this connection, according to bureau officials, in inspecting gages and in assisting in their design. The section would also be of service in securing the standardization of parts among various concerns.

Investigations are to be made, in conjunction with the metallurgical section of the bureau of the subject of the proper heat treatment and annealing of steel for the various kinds of gages and, in conjunction with the chemistry department of the chemical compositions of steels best suited for gages. It is also planned to make a study of the various lapping compounds in order to determine which are best suited for certain purposes. Study will be made to show discrepancies in the fit of plug and ring thread gages due to differences in angle and lead.

The future of the bureau's gage section contemplates an investigation of the utility of flush pin gages and of built-up snap gages and the working out of a proper method of etching lines on gages with the object that the lines be correctly located, straight, and narrow, but distinct. Efforts are to be made to work out indicators which are more sensitive and constant than those at present in use. The effect of different lubricants on the cutting qualities of taps while working in different materials with reference to the size of the hole cut also is to be given attention, as will be the possibility of salvaging of gages by means of electrically nickel-plating gaging surfaces.

"A New 6600-volt Steel Tower Transmission Line in the Steel Mill District of Ohio" is the title of a paper presented by William H. Grove, electrical engineer of the Republic Engineers, Inc., before the Brooklyn Engineers' club, Brooklyn, Feb. 13. Mr. Grove's paper analyzes all the factors involved in the construction of this transmission line.

Engine Lathes for Precision Work

A Description of How Various Lathe Parts in the Process of Making Are Routed Through the Grinding, Planing, Milling, Turning and Assembling Departments at a Machine Tool Plant in Cincinnati

MACHINE tools in the eighteenth century surely were crude. A machinist's working tools usually consisted of a hammer, calipers, a wooden rule, dial, and chisel, and with this equipment he did his day's work. Various parts of the lathes then in use were made of wood because this was the only material that could be worked with the machinist's assortment of tools. Most of the lathes in existence in 1775 were of the pole type, that is, they were operated by means of a cord which was attached to one end of a pole, the other end being securely fastened to the ceiling. The cord was wrapped around the material in the lathe and then attached to a foot treadle. When the machinist operated this treadle, the material in the lathe rotated alternately backward and forward, and was caught with a hand tool on each forward turn. Only high-class lathes were fitted with spindles operating continuously by means of a direct drive. These lathes, however, were not adapted for cutting metals, because their equipment did not include a tool-holding device. Yet, how many of our present-day machine tools could have been built, had it not been for those crude machine tools of the eighteenth century?

The lathe is probably the best-known machine tool that came from the genius of our forefathers. It may be safely classed as the most widely used machine tool in present-day machine-shop practice. Among recent companies to engage in the manufacture of lathes is the Cisco Machine Tool Co. This company was organized in 1915 with a capitalization of $100,000, but in order to keep abreast of the increased demand for lathes which resulted from the war, the capitalization later was increased to $150,000 and a new plant constructed in Cincinnati. Thus one more name is added to the list of Cincinnati manufacturers who, great and small, have placed that city in the lead as one of America's greatest machine-tool centers.

Plenty of Light Provided

The axis of the Cisco Machine Tool Co.'s plant lies north and south. The building which houses the main office, crating, storing and shipping departments, is separated from the plant by a public thoroughfare. The main building is of brick construction, two stories high, the top floor being supported by structural beams and columns. Each floor is amply lighted through 12 double-sashed windows built in the walls. Single-sashed windows are also provided in the front and rear of the building. The structure is built irregularly, being 60 feet wide at the front, 64 feet wide at the rear, and 222 feet long. Scrap bins are located in the rear. The welfare of the workmen was carefully considered when the shops were designed. Work benches are built along the side walls on the interior. Steam for heating the shops in winter is circulated through coils of pipe installed between the side walls and the various benches. To promote efficiency an intershop telephone system is installed, making it possible for the superintendent to communicate with any workman without the latter leaving his bench. Individual steel lockers are provided for the men. They are located in the basement together with the washrooms. Sanitary drinking fountains are also installed on both floors.

Particular attention has been paid to the routing of lathe parts through various departments in order to prevent unnecessary handling. Monorail cranes are used for handling heavy parts and trucks for handling the light parts. The small parts are finished, ready for assembly, on the second floor, and the large units on the first floor.

The brick building which houses the receiving and grinding departments is 20 x 180 feet. It is separated from the main building by a spur track, over which incoming material is brought in railroad cars. The rough casting-storage department is housed in the northern part of the building, as shown in Fig. 7, and the grinding department in the southern part of the same building.

FIG. 1—PLANING FOUR 10-FOOT LATHE BEDS AT ONCE. TOTAL WEIGHT SUPPORTED BY PLANER CARRIAGE IS 31,200 POUNDS

The company does not operate a foundry and therefore buys all its rough castings for lathe parts. Lathe beds, which are among the castings purchased, are usually delivered in an automobile truck. When this is the case, the truck is driven up as close as possible to the end of the receiving building where the monorail system begins. The lathe beds are removed from the bed of the truck by means of a monorail crane, and are either piled in the storage room or transferred to the grinding department. The monorail extends out from the building so that the crane can be positioned over the bed of the truck in order to obtain a vertical lift. The monorail passes through the storage and the cleaning department, extends out into the storage yard for a short distance and then makes a bend, entering the rear end of the shop through two swinging doors. The latter are built in the eastern side of the building. Here it makes a 90-degree bend, and serves one aisle on the ground floor of the shop. At the north end of the aisle it makes another 90-degree bend, passes out of the building through two doors and ends at right angles to the storage building.

Cars Unloaded by Crane

When castings or semifinished material is received in a railroad car the latter is spotted at the north end of the plant under the monorail which connects the storage and main buildings. If the castings are to be stocked or their surfaces ground, they are transferred to the proper departments; otherwise they are transferred together with the semifinished stock to the various benches inside the main building.

Each machine tool used in making the lathe parts is equipped with a steel tray mounted on legs. The tray is placed underneath the lathe bed and catches the steel turnings thrown off during the process of machining. At the rear of both floors of the shop are chutes which lead to large bins on the outside of the building. At the end of a day's work, the turnings are emptied into the chutes and slide to the bins.

FIG. 3—LATHE FOR CUTTING GEAR BLANKS FROM STEEL BARS. FEED BOXES ARE ASSEMBLED IN THIS DEPARTMENT

The sole output of the Cisco Machine Tool Co. is engine lathes. The standard equipment of each tool consists of a large and a small face plate; a compound follow and steady rest; a double-friction countershaft; two centers; a tool post, tail stock and thread-indicator wrench; tool tray, thread indicator, and a thread stop. The standard equipment also includes an automatic stop on all beds under 8 feet in length. The lathes are made in 14, 16, 18 and 24-inch sizes. The method of machining and assembling the various parts used in building the 24-inch lathe is identical with that used for building the smaller sizes.

FIG. 2—LATHE BEDS ARE PAINTED IN THIS DEPARTMENT, AFTER THEY HAVE BEEN GROUND, PLANED AND BORED

The castings are usually taken to the cleaning department where blisters and other surface defects are removed by means of two twin grinding wheels, which are driven electrically. To protect the workmen in this department from inhaling the fine dust which results from the grinding process, an exhaust system has been installed. After the castings are thoroughly cleaned, they are either transferred to the ground floor of the shop building or loaded into boxes and hoisted to the second floor. The planing, milling, drilling, boring, lathe-screw, headstock, painting and assembling departments occupy the first floor. On the second floor are located the spindle, threading, gear, pulley, feed box, face plate and tool departments. Various lathe parts in the process of manufacture are transferred from the first to the second floor or vice versa by means of an elevator shown in Fig. 8. When a lift is to be made, the crossbar which supports the platform of the elevator is hooked onto the cable of the monorail crane. When material is to be hoisted from outside the building, the elevator platform is detached from the crane and locked to the second floor. The crane is then used for exterior hoisting. Fig. 8 shows a load of feed boxes and back plates, which were elevated from the first floor.

Planing Lathe Beds Wholesale

The 24-inch lathe bed is made of semisteel and ribbed in order to insure a permanent alignment. The legs are designed for strength with extra large bearings on the bottom of the bed. The latter is planed and racked on a 60-inch planer which was built by the Cincinnati Planer Co., Cincinnati. The planer carriage has a travel of 58 feet and is driven by a 25-horsepower General Elec-

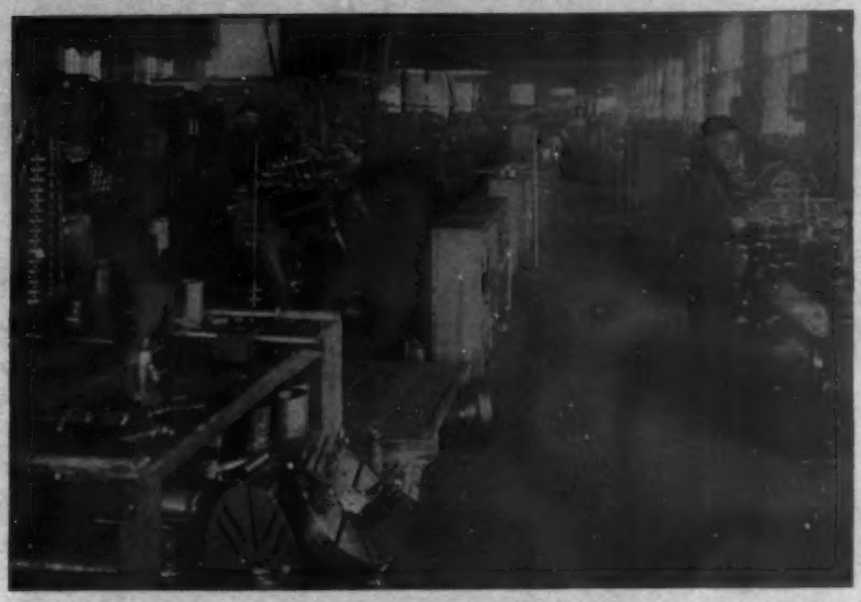


FIG. 4—SPINDLE STEEL FOR THE HEAD AND TAIL STOCKS IS MACHINED ON FOUR DIFFERENT LATHES IN THIS DEPARTMENT

tric reversing motor. The rail and rail head are operated by a 2-horsepower motor. The latter is controlled by means of a push button which is easily reached by the operator. The carriage of the planer has a holding capacity of either eight 6-foot, six 8-foot or four 10-foot lathe beds. Fig. 1 shows four 10-foot beds being planed. The net weight supported by the carriage is 31,200 pounds.

After a 24-inch lathe bed is planed, it is lifted from the carriage by means of a jib crane and swung around until it is positioned under the monorail. It is hoisted by the crane and taken to a drill press, where the necessary holes are bored. After this operation is completed it is transferred to the paint department located nearby and painted. When the paint has dried thoroughly, the bed is taken to the assembling department. The latter occupies considerable space in the northwest corner of the ground floor.

Careful Planing is Required

The planing department is also equipped with a 32-inch x 18-foot planer for machining lathe carriages and two 42-inch x 14-foot planers for machining head stocks. These planers are both driven from an overhead line shaft. The length of the carriage bearing and the ways of the 24-inch lathes is 36¼ inches; the width of the bridge is 11 inches. A center clamp operates in conjunction with the 24-inch lathe carriage. The latter is provided with ample oilers and with oil grooves in the Vees which makes it possible to maintain a constant oil flow along the shears. Carriages are also gib drilled on the back so that a taper attachment can be applied at any time.

The headstock is thoroughly ribbed throughout, and is built with long housings, the length of the stock at the base being 40 inches. It is semienclosed and is equipped with sight feed oilers. Small openings for removing oil and dirt easily are provided in the rear. The headstock is so arranged that the relieving attachment can be applied at any time. The face gear is locked to the cone pulley by a bolt which is placed in a slot and operated by the tool-post wrench. The headstock after being planed is taken to the milling department where it is milled by a shaft-driven miller furnished by the Cincinnati Milling Machine Co., Cincinnati. This machine is also used for milling carriages, compound rests and compound splined lead screws.

After the lathe carriages are planed and the headstocks milled they are taken to the drill presses which drill the necessary bolt holes. Two presses, one having a 6-foot radius and the other a 3-foot radius, are provided for this purpose. They were built by the Dreses Machine Tool Co., Cincinnati.

Electric current for operating all the machines used for preparing various lathe parts for assembly is produced by a 250-volt generator installed in the small-parts storage department on the first floor. The generator was built by the Northern Electric Co., Madison, Wis. It is driven at 290 revolutions per minute by 50-horsepower engine, using natural gas. The engine was supplied by the Reeves Engine Co., Mt. Vernon, O. Compressed air is used for starting the engine. The electric power unit is shown in the center of Fig. 2. A 50-horsepower Allis-Chalmers motor drives the line shaft, from which the boring mills, drill presses, the grinder, the miller and two planers are driven. All line shafts throughout the plant are suspended from the ceiling by means of hangers equipped with roller bearings. The latter were furnished by the Hyatt Roller Bearing Co., New York.

How Spindles Are Prepared

Spindle steel is purchased with a carbon content of 0.50 per cent. The diameter of the tail-stock spindle used on the 24-inch lathe is 3¼ inches. In machining the steel for both the head and tail stocks it is first placed in a lathe and given a roughing cut. It is then placed in an adjacent lathe which bores a 2½-inch hole for the stock. A third lathe cuts four threads per inch on the nose and gives the finishing cut on the surface. After an oil groove is cut by a fourth lathe, the spindle is taken to the grinder on the first floor and there put through the finishing operation. The lathe department, which is shown in Fig. 4, is also equipped with lathes which are used for giving the roughing cuts on cone pulleys and boring them for their spindles. All

FIG. 5—HEAD STOCKS, CARRIAGES, AND COMPOUND RESTS AFTER BEING PLANED ARE TAKEN TO THE MILLING DEPARTMENT

FIG. 6—ALL CYLINDRICAL SURFACES OF THE ENGINE LATHES ARE GROUND AND ALL FLAT SURFACES ARE SCRAPED TO A BEARING. THE ASSEMBLING AND TESTING DEPARTMENTS HERE SHOWN ARE SERVED BY THREE MONORAIL CRANES

lathes used in this department are driven from a line shaft, which in turn is driven by means of a 10-horsepower motor bolted to the joists. The diameter of the maximum step of the head cone of the Cisco Machine Tool Co.'s 24-inch lathe is 18 inches and the diameter of the minimum step, 12 inches. The width of the cone belt is 4½ inches.

Feed boxes after being planed, bored, and painted, are hoisted to the second floor and taken to the gear-assembling department where the various gear trains are installed. This department is shown in Fig. 3. All gears are cut from solid steel bars where possible. After the face plate is given a roughing cut, a center hole is bored and threaded for its spindle. It is then sent to the first floor and tested on a set-up lathe.

The assembling department on the first floor, shown in Fig. 6, is served by one 2-ton and two 4-ton monorail cranes. In assembling the various size lathes, the carriage is positioned on the bed, a coat of red lead having been applied to the bearing surfaces, beforehand. The carriage is slid over the bed and then removed. If any high spots are found on either the bed or carriage, they are removed by scraping. The same method is pursued in removing any high spots if found when assembling the head and tail stocks. If in the final assembly, any parts should need further machining, it is done on lathes installed in this department, instead of taking the part in question to the lathe department on the second floor.

A 24-inch compound rest is mounted on the carriage. The rest is equipped with four clamping bolts which insure a rigid and solid connection between the swivel and bottom slide. The carriage also supports a drop-forged tool-post which is equipped with taper gibs. The apron is of the double-plate type and is built with a back support to the studs. Feeds are obtained by means of a multiple-pitch, steel worm and bronze worm wheel which runs in oil. The bronze worm gear feeds upon a steel worm sleeve which in turn is keyed to a splined lead screw. This type of construction tends to eliminate the wear and tear on the lead screws. A safety

FIG. 7—BUILDING AT LEFT HOUSES THE STORAGE AND GRINDING DEPARTMENTS; BUILDING AT RIGHT HOUSES THE VARIOUS LATHE MACHINING AND ASSEMBLING DEPARTMENTS. FIG. 8—THIS MONORAIL CRANE BESIDES HOISTING MATERIAL FROM THE EXTERIOR OF THE BUILDING IS USED FOR OPERATING AN ELEVATOR

device is provided between the feeds and the lead screw so as to make it impossible to engage but one at a time. The upper pull pin is so arranged that when the lathe is to be used for high-speed work all gears may be thrown out by placing the pin in the neutral position. Eleven speed changes are obtained through the gear box by operating the gear-shift lever. By these changes 38 different threads and feeds are possible. The lower and upper pins each give two gear ratios through the box.

Both longitudinal and cross feeds are independent but are obtained through the same friction and can be reversed in the apron. When the screw is disengaged, the half nuts are automatically locked. By means of this construction the possibility of accidentally engaging the screw is eliminated. The half nuts are made so that they cannot lock the feed screw too tightly. Both the cross feed and top slide are provided with micrometer graduations, the swivel slide being graduated on each side. The 24-inch lathe apron is equipped with a star knob which operates through a chain of three gears. By this means the knob is placed within easy reaching distance of the operator.

All tail stocks are graduated. The 24-inch lathe tail stock is equipped with two plug clamps which when drawn together, lock the spindle firmly. The tail stock is also equipped with a crank device for moving it along the bed and four clamping bolts to prevent slipping.

After a finished lathe passes a thorough inspection under working conditions, it is transferred to the crating department. As was previously mentioned, this department together with the general offices, is housed in a building 60 x 150 feet located on the opposite side of the street from the shop building. If immediate shipment is desired, the lathe is crated or boxed and moved to the rear of the building. On the outside of and built at right angles to the building, is a platform which leads to the railroad siding. On this platform are built roller tables upon which the crated lathes are transferred to the railroad cars for shipment.

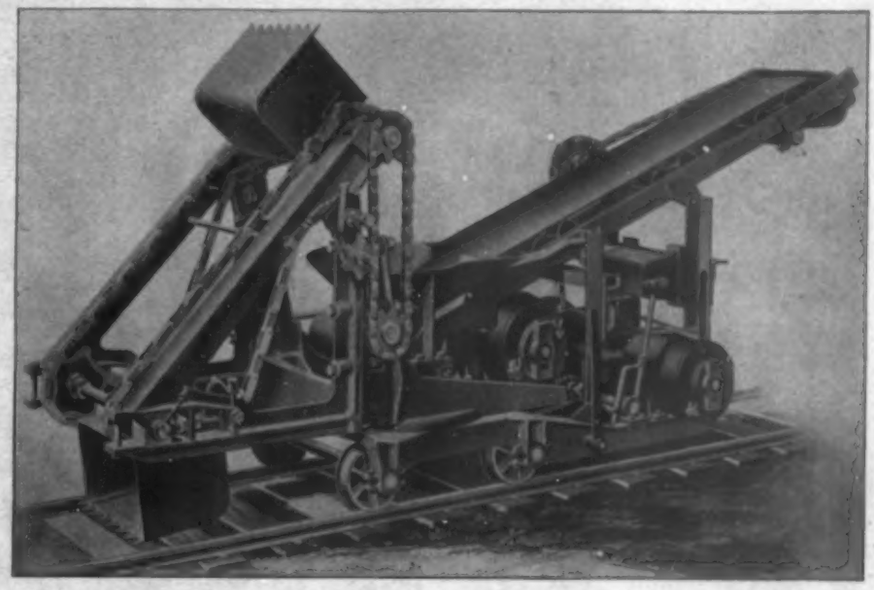
Book Review

Inventor's Manual, by George M. Hopkins; cloth; 144 pages, 5x7½ inches; published by the Norman W. Henley Publishing Co., New York, and furnished by THE IRON TRADE REVIEW for $1.25 net.

This book which was compiled to meet the requirements of the individual who is possessed of ideas worth patenting has entered its second edition. As the author states it contains hints and information on patents generally and outlines approved methods for bringing them to public notice. The data have been revised and those relating to the legal phases of the subject have been reviewed and criticised by a firm of practicing patent attorneys. Guidance is offered to protect the inventor from sharp practice in taking and disposing of his patents. The various forms required in making application, assigning, licensing, and extending grants are shown. The census of 1910 is analyzed by occupations and the populations of cities and counties are given to aid the inventor. The subject of design in patenting completes the book.

New Mine Loading Machine Brought Out

A continuous twin-scoop mine-loading machine, which digs loose ore, dirt or muck by a continuous scooping process, has been brought out by the Wellman-Seaver-Morgan Co., Cleveland, after several years of development work. The machine, which is shown in the accompanying illustration, is self-propelled and can be easily transferred about a mine. It consists of three parts—truck, digging head and conveyor, which it is said can be easily dismounted and re-assembled.



TWO SCOOPS DROP THE ORE INTO A HOPPER WHICH FEEDS ONTO CONVEYOR BELT. THE LATTER DISCHARGES INTO CARS

Essentially the loader is a labor and time saver. It removes loose ore, etc., by a continuous scooping process—the material being taken up by scoops attached to an endless chain. This chain elevates the scoops and unloads them into a hopper which in turn feeds to a conveyor belt. The belt loads into cars.

The scooping mechanism is so arranged that it can dig to the side as well as to the front, and is said to be able to load at the rate of over a ton per minute. It is fitted with motors wound for 230 volts, direct current, which provide power for all the operations. The motors are of the enclosed type and all chains and gears are protected with guards. The framework of the machine is of steel and all parts are protected as much as possible from dirt and water. The machine weighs 8000 pounds, and has an average capacity of 45 tons an hour.

Heat Treating Metals by New Process

H. Fuller & Co., Ltd., Sheffield, Eng., have perfected a system for heat treating metals without risk of subsequent oxidization and distortion of machinery parts. The method consists of immersing the metal in a special bath of salts. Advantages claimed for the process are that it avoids oxidization, decarbonizing, scaling or blistering of surfaces, produces uniform surface hardness, enables the use of unskilled labor in the hardening shop and reduces the number of furnaces required, owing to the greater speed with which the work can be done.

Says Outlook for Beehive Coke is Uncertain

H. B. Kirkpatrick, contract manager of the Koppers Co., Pittsburgh, was the speaker at the regular monthly meeting of the Pittsburgh Foundrymen's association Feb. 17, his subject being "By-product Ovens and By-product Coke." The lecture was illus-

trated by moving pictures. The pictures taken at the plant of the Laclede Gas Co., St. Louis, showed in detail the entire process of making coke in a by-product oven. Subsequent to the paper, came a general discussion of by-product coke, more especially from the angle of its use in cupola practice. Mr. Kirkpatrick and F. W. Sperr, chief chemist of the Koppers Co., answered questions that were freely propounded by the foundrymen.

The discussion brought out that comparatively few foundries in the Pittsburgh district are using by-product coke. This was ascribed to the fact that experiments with this kind of fuel had not always been successful and it also might be charged to the fact that just as the foundryman is an individualist in the matter of general practice, so he is in the matter of the use of coke. Mr. Kirkpatrick warned the foundrymen that whether they liked it or not, within 15 or 20 years they all would be using by-product coke as he pointed out that beehive production was constantly tapering off and that in the natural course of events it would be entirely eliminated eventually.

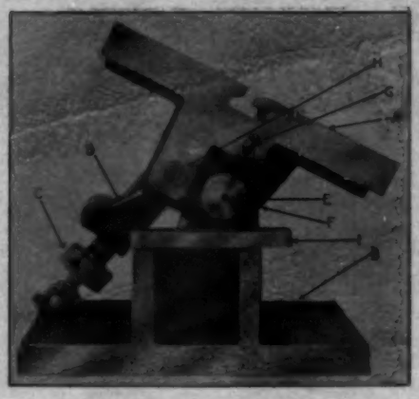
The meeting was largely attended and the discussion following the paper was the most spirited that has marked any of the recent meetings of the association. J. Lloyd Uhler of the Union Steel Castings Co., Pittsburgh, president of the association, presided at the meeting.

Angle Plate Facilitates Close Work

On many precision machining operations, it is necessary to locate at an angle the piece to be milled, planed or ground. Setting up for work of this kind is generally an expensive operation as the workman has to resort to roundabout methods and, again, the results as regards the accuracy of the setting are often unsatisfactory.

To facilitate the setting of angular work, the Kar Engineering Co., Inc., New York, recently developed the angle setting fixture shown in the accompanying illustration. The fixture is simple in construction and it is said that it is productive of accurate results. It consists of a movable plate, *A*, which is swiveled on the base *B*. The base is fastened to the platen of the machine on which the work is to be done. The plate swings through a quarter of a circle which permits settings ranging from 0 to 90 degrees.

The movement of the plate is controlled by a telescopic adjusting screw, *C*, which also serves the purpose of a brace after it is securely clamped at the desired setting. The lever, *D*, tightens a binding screw which takes up all backlash in the screw. The fulcrum, *E*,



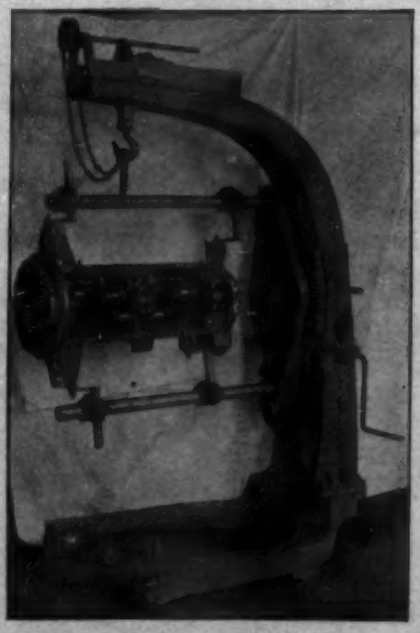
ANGLE PLATE FOR PRECISION WORK

on which the plate moves, is equipped with a nut and clamping sleeve, *F*. This sleeve slides lengthwise and is prevented from turning by a key let in between the sleeve and the plate lug. By this arrangement, it is said, both lugs on the plate are held without being subjected to distortion.

In setting the plate to the desired angle, measurements are taken over either of the two pins *G* and *H* and the under side of the overhanging plate, *I*. The object of the two pins is to enable the sines on both the angle and its complement to be used. When the surface plate rotates from left to right, the distance *G-I* corresponds to the cosine of the angle and *H-I* to the sine. When the surface plate rotates from right to left *G-I* becomes the sine and *H-I* the cosine.

The pins *G-H* are so arranged that by measuring the distances *G-I* or *H-I* with a 2-inch micrometer the readings indicated represent the exact trigonometric value of the angle of the plate *A*.

In determining angles, either the sine or the cosine can be used. As there is a greater difference in the sine per degree as the angle approaches 90 degrees, greater accuracy is obtained by using the cosine and, on the other hand, as the angle approaches zero, more accurate results are obtained by using the sine of the angle.



PORTABLE HOIST EQUIPPED WITH DEVICE FOR HANDLING AUTOMOBILE MOTORS

Revolving Crane Has Many Operating Features

The apparatus shown in the accompanying illustration was recently developed by the Canton Foundry & Machine Co., Canton, O., for handling automobile motors during assembly and repair operations. It consists of a motor stand actuated by means of worm gearing and equipped with longitudinal bars to which the motor is fastened by means of adjustable brackets. The device is used in connection with the company's portable floor crane and hoist.

The unit forms a complete medium as it embodies a hoist, truck and means for working on the motor to advantage. It is pointed out that the motor is readily taken out of the chassis, hooked on to the motor stand and that it can be quickly ransported to any part of the shop—near a window for illustration where the light is best.

The revolving feature of the motor stand is designed to permit the operator to work to the best advantage regardless of what particular part of the motor he is working on. Whether working on the crank shaft, cam shaft or from the cylinder end of the frame can be turned to the most convenient angle.

The device has a capacity of two tons, a clearance lift of 6 feet and 4 inches and is equipped with roller bearings to reduce friction to a minimum.

Ship Steel Discussed

Structural steel for ships is discussed in a booklet just issued by the Carnegie Steel Co., Pittsburgh. Standard practice recommended by American steelmakers and adopted by the Emergency Fleet corporation are explained. The book covers thoroughly the sizes of steel required for shipbuilding purposes, particularly cargo vessels. Emphasis is placed on the fact that to secure maximum production, orders should reach the rolling mill in the form best suited for plant operations. To effect this result is is desirable that shipbuilding practice conform to the uses established as standard in the fabrication of shapes and plates for bridges, buildings and cars and that useless minute variations be eliminated.

Specifications for ordering structural shapes and plates in different widths, extreme sizes, etc., are given, together

with a table of structural shapes recommended for ships. Standard specifications for test pieces adopted by the American Society for Testing Materials are also included.

An elementary discussion of rolling mill practice and steel works procedure as related to the manufacture and shipment of ship steel is included. This discussion sets forth why rolling mills in this country were not always in a position to furnish ship steel on short notice, owing to the variety of sizes specified.

The booklet is a very complete manual on the subject discussed. It is now in its second edition and will prove valuable to the engineer and shipbuilder.

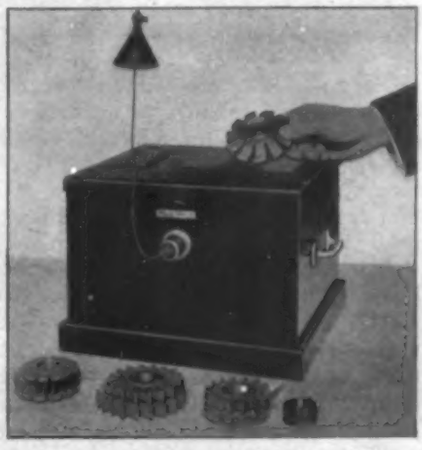
Gear Makers Meet to Plan Standardization

The standardization committee of the American Gear Manufacturers' association held a meeting at Hotel Statler, Buffalo, Feb. 10 and 11. Every committee of the association had a well-defined plan laid out for future activities. All committees were urged to seek the co-operation of other organizations interested in the standardization of gears. It is probable that quite an advance toward standardization will be made by the time of the association's annual meeting in April. Those in attendance were: Robert J. Coulter, Philadelphia Gear Works, Philadelphia; Lars G. Nilson, Nilson-Miller Co., Hoboken, N. J.; A. A. Ross, General Electric Co., Schenectady, N. Y.; B. F. Waterman, Brown & Sharpe Mfg. Co., Providence, R. I.; Chester B. Hamilton Jr., Hamilton Gear & Machine Co., Toronto, Can.; S. A. Smith, Meisel Press Mfg. Co., Boston; John Christensen, Cincinnati Gear Co., Cincinnati; F. C. J. Awig, Van Dorn & Dutton Co., Cleveland; J. C. O'Brien, Pittsburgh Gear & Machine Co., Pittsburgh; F. W. Sinram, Van Dorn & Dutton Co., Cleveland; Henry J. Eberhardt and Frank E. Eberhardt, Newark Gear Cutting Machine Co., Newark, N. J.; William W. Taylor, Taylor Machine Co., Cleveland; George F. Stahl, Stahl Gear & Machine Co., Cleveland; W. H. Lyman, Warner Gear Co., Muncie, Ind.; C. E. Crofoot, Crofoot Gear Works, Boston; F. Schneider, Van Dorn & Dutton Co., Cleveland; W. H. Diefendorf, New Process Gear Corp., Syracuse, N. Y.; Frank Horsburgh, Horsburgh & Scott Co., Cleveland; A. C. Gleason, Gleason Works, Rochester, N. Y.; C. H. Logue, Brown-Lipe-Chapin Co., Syracuse, N. Y.; R. L. Dodge, New Process Gear Corp., Syracuse, N. Y.; F. Zollinger, Timken-Detroit Axle Co., Detroit; A. F. Cooke, Faucus Machine Co., Pittsburgh; W. H. Phillips, R. D. Nuttall Co., Pittsburgh.

Reduce Tool Inefficiency With Demagnetizer

Tools, such as cutters, drills, reamers, etc., which have become magnetized, will hold small particles of steel with which they come in contact. This is not only annoying but in many instances these particles cling to the edges of the tools, reducing their efficiency and often causing them to break.

To reduce this inefficiency to a minimum, the Electric Brazing & Welding Machine Co., New York, has designed a demagnetizer, which it is claimed, will demagnetize tools that have become magnetized after being held on



DEMAGNETIZER FOR CUTTING TOOLS

magnetic chucks or from static discharges from belts. It is said that the demagnetizer, which is shown in the accompanying illustration, will demagnetize a tool in a second

Tool Dealer Incorporates

On Feb. 1, the firm which has been operating under the style of C. H. Westerberg, 9-11 West Broadway and 54-56 Barclay street, New York City, was incorporated. The name of the concern now is C. H. Westerberg & Co., Inc., and the management, personnel and finances remain the same as heretofore. It will continue to specialize in the distribution of metal cutting tools and equipment. The officers are as follows: President, C. H. Westerberg; vice president, A. M. Maddox; treasurer, Charles Westerberg; and secretary, E. Goehrig.

The Carlin Steel Products Co., Commercial Trust building, Philadelphia, has taken the Philadelphia sales agency of the Pittsburgh Rivet Co.

New Opportunities

For Americans in Australia—Furnace Brick in Great Demand

(Special Correspondence.)

Newcastle, N. S. W., Feb. 6.—Furnace brick are in great demand in Australia at present. Although this country has the necessary silica, chrome and clay deposits for manufacturing the brick there are no experts able to handle the propositions occurring daily in furnace requirements. Vast mineral deposits here are sadly in need of development, suggesting a fertile field for American money and ingenuity. Abundant deposits of iron, tin, lead, copper, arsenic, antimony and wolfram are being neglected for lack of capital and enterprise. The French government has just ordered 100,000 tons of rails from the Broken Hill Proprietary Co., Newcastle.

The blast furnaces of the Newcastle Steel Works produced 8471 tons of pig iron in November, 1918, and the foundry furnaces produced 2094 tons of iron. The open-hearth furnaces produced 9499 tons of steel, the blooming mill, 10,800 tons and the rail mill 1668 tons. The production of coke totaled 13,150 tons; tar, 124,000 gallons, and ammonium sulphate, 198 tons.

The Lithgow Steel Works has just completed a railway connecting its plant at Spring Hill with the Iron Duke mine, a property it recently acquired. The company's experts estimate the amount of ore available at 36,000,000 tons, averaging 57 to 65 per cent pure iron, 5 to 10 per cent silica and from 0.013 to 0.051 per cent phosphorus.

A Melbourne syndicate has been formed with large capital to open a plant for the manufacture of nails adjacent to the Newcastle Steel Works.

Morrison & Bearby, Carrington, have just completed a large condenser plant, delivering 27,000 pounds of exhaust steam per hour.

The commonwealth government has announced its intention to finance the copper producers for three months dating from Jan. 1. The value of the copper output for 1918 of the three smelting plants in Queensland is $6,250,000.

The Electrolytic Zinc Co., Risdon, Tasmania, is now producing 12 tons of zinc daily and the company is planning to increase the output to 100 tons. The program includes the manufacture of many zinc products. A mill for rolling zinc plate is being erected, the company having spent $1,500,000 recently in plant extensions.

British Strikes Set Back Iron Trade

General Suspension of Operations Considered Until Serious Difficulties With Workmen Can be Adjusted—Trial of 8-Hour System Results in Heavy Loss —Loss of Trade to Americans Prophesied

Bureau of The Iron Trade Review,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Feb. 7.

STRIKES prevailing in several industries have given the iron trade a severe setback. At no time during the war was the state of trade a cause for real anxiety, but the feeling is very different now. There is a general sense of disheartenment that, having safely sustained the shocks caused by war, trade should be wounded, so to speak, in the house of its friends. Nobody is disposed to buy because of uncertainty as to prices. Neither manufacturer nor merchant can give a firm quotation. Many overseas offers of business are being turned down. There is a feeling that there will have to be a general suspension of business before the workpeople take a rational view of the situation and assist the manufacturers to produce with a reasonable prospect of profitable sales.

Pig iron is selling slowly in small lots, and without any surplus to form the nucleus of stocks. Furnaces have been worn until they must have a period of idleness for renewals and repairs. In the Cleveland district there is a steady transfer of furnaces, temporarily put on basic production, back again to ordinary forge and foundry iron. This is a movement which has universal approval, these makes being permanently deficient. A good sign is the increase in shipments which are improving, the total exports from Cleveland for January being 30,000 tons. The total warrant stock still is only 250 tons. The entire production of East coast hematite still is under control, the authorities taking care to meet the needs of home customers. The Sheffield users of Swedish pig iron have benefited to some extent by the heavy drop in freights and insurance, and the improvement in the Swedish exchange. Makers in Sweden, however, have so far not reduced their selling prices, as they state that their costs have actually increased since the close of hostilities. The government has lately been in the market for the sale of about 80,000 tons of pig iron which was kept as a reserve stock, and is no longer necessary. The selling prices are not published, but as the material was purchased at about prewar prices no doubt a fair profit was made.

The 8-hour day system has fared differently in the iron and steel trades. In the latter it has been adopted quite easily, as most of the steel works operate on a system of continuous production, by means of the triple 8-hour shift, and it is a simple proposition for one shift to succeed another. The situation in the iron mills, however, is different, especially in South Staffordshire where anything like continuous production practically is unknown. The number of puddlers is insufficient and a triple shift is out of the question. Puddling does not lend itself to fixed time arrangements. Nearly a fortnight ago the ironmasters of the district decided to begin an experimental run on the 8-hour system, the idea being to continue it for a month. After a week's trial, several firms are so disgusted that they threaten to shut down at the end of this week. A great deal has been made by the workpeople of the idea that it will be possible to reduce the hours without reducing the output. As far as puddlers are concerned, it was understood that there should be five puddled heats "with the usual scrap," which practically meant an additional scrap heat. In practice, no plant seems to have got more than four heats in any turn, a most alarming reduction in output at a time when the supply of puddled iron is deficient.

Labor Shows Apathy

But this is by no means the worst feature of the situation. The shift finishes at 2 o'clock in the morning, and the furnaces have to be fired for four hours without output, until the next shift commences. This is a serious matter, with fuel at top prices. One moderate-sized concern estimates its losses in output and fuel during the week, at between $1000 and $1500. The situation is not much better in the mills. So far from the men showing a spirit of co-operation they have gone off at the termination of the shift leaving half-heated iron in the furnace. This has proved another fruitful source of loss.

There were many earnest consultations on the Birmingham exchange yesterday, the upshot of which promises to be a general suspension in the iron trade of the district at the end of this week. The only saving feature of the situation seems to be that a number of the workmen are anything but enthusiastic over the new system, and, unless prevented by outside influences, they will be quite willing to revert to the old system, doing a reasonable day's work within the day, without a too strict adherence to hours. Unless this is done, ruin for the industry is prophesied. The whole situation will have to be reconsidered, with a view to some better working arrangement.

Ever since the government issued its new list of export steel prices, prophecies have been general that this country will be beaten in the open market, whenever American competition begins in earnest. A large exporter in London a few days ago informed some Sheffield exporters that in regard to certain steel required for Australia, American and Japanese quotations were £5 ($24) below those sent out from this country. This is regarded as the beginning of a condition of things which, if continued, must cause a great shrinkage in the trade carried on between this and foreign countries, and especially with the British dominions.

Makers of semifinished steel are getting together with a view to attaining something like uniformity in their quotations. The ministry of munitions price is £11 12s 6d ($54), but makers are quoting all sorts of prices up to £13 ($64.80) taking advantage of the ministerial willingness to approve of arrangements between buyer and seller where the government price is exceeded. It is felt to be absurd that prices should vary so widely. The general effect of the consultation is quite likely to be a moderate quotation, as buyers are quite cautious in placing their business, and, on account of the small demand, a number of open-hearth furnaces in the Sheffield district have ceased production. As far as the mills are concerned, there are still many arrears to work off.

Reconstruction is by no means working out according to plan. The labor troubles have arrested the big demand that was expected and there seems a prospect of further reduced production. While the railways are badly wanting material they will order as little as possible in view of the prospect that there must be some competition shortly for business which, it is believed, will depress prices.

Valley Plant Produces Own Steel

Complete Steel-Making and Semifinishing Capacity Places Finishing Mills on a Self-Contained Basis—Blooming Mill Manipulators Are Unique—Safety Features Have Been Given Full Consideration—Description of Plant

JAMES R. GARFIELD, our second martyred president, once drove canal-boat mules along the Ohio-Pennsylvania canal. As he trudged along the flat country he might have pictured the great industrial establishments which were destined to spring up, flourish and serve their country in trying times yet undreamed. But even the most vivid imagination could not have pictured that great steel plant which has taken its place within a stone's throw of the tow-path on the outskirts of Warren, O.—the plant operated by the Trumbull Steel Co.

This company was incorporated in 1912 with a capital stock of $1,250,000. Plans were soon under way for building six sheet mills, six mills for rolling black plate for tinning and 13 cold mills. By July 31, 1913, these were placed in operation. The capital stock was increased May 5, 1914 to $2,500,000 and soon after eight sheet mills, 10 tin mills and 22 cold mills were added to the original plant.

On Aug. 6, 1915, the capital stock was again increased, this time to $4,000,000, for the purpose of erecting both hot and cold strip mills and a steel plant. On May 15, 1917, the cold strip mills which consist of four stands, each of 8, 12 and 16-inch rolls arranged in tandem, were placed in operation. While this department was turning out its product, the building of 16 and 20-inch hot strip mills progressed rapidly and by Dec. 1, 1917, hot strips were gliding down the runout table. Both the hot and cold strip mills were described in the April 18, 1918, issue of THE IRON TRADE REVIEW. While the strip mills were under construction, a steel plant which includes seven 100-ton stationary open-hearth furnaces, a 36-inch blooming mill and an 18 and 21-inch bar mill, was designed. No. 1 open-hearth furnace was the first steelmaking unit to be finished and was placed in operation March 9, 1918. The first heat of steel was tapped from No. 7 furnace, Oct. 30, 1918, thus placing the steelmaking department on a complete operating basis. The open-hearth furnaces were built by the Alex Laughlin Co., Pittsburgh.

In the meantime the rolling-mill building was gradually taking shape and long before it was roofed, workmen were assembling the 36-inch blooming mill and the 18-inch bar mill. Considerable delay was encountered in starting the semifinishing mills due to the fact that the government requisitioned a turbine and other equipment for use on one of its battleships. The first ingots, however, were broken down in the early part of July, 1918.

The steel plant is situated approximately three-fourths mile from the finishing mills, the axis of the plant running north and south. The building which houses the open-hearth furnaces is built approximately in the center of the plant site. It is paralleled on the east by the gas-producer plant and stock house and on the west by the rolling-mill department. The buildings are roofed and sided with heavy-gage painted, corrugated sheets which were rolled in the finishing mills of the Trumbull Steel Co. The Riter-Conley Co., Pittsburgh, erected the buildings.

Pig iron, crop ends of billets, sheet shearings, rails and structural sections are received in railroad cars which are shifted over a single track into the stock-house building. The track is placed along the eastern side of the building which is 93 x 500 feet. Scrap is unloaded from the railroad cars and piled by means of a 10-ton magnet which is suspended from a traveling crane. Two cranes are provided. A train of trucks each carrying four cast-steel charging boxes of the usual type is brought into the building at the southern end by means of a dinkey engine. After the boxes are loaded with scrap they are weighed, one truckload at a time and then hauled to the charging floor of the open hearths.

In transporting the scrap from the stockhouse to the open-hearth furnaces the buggies are taken up over a trestle which supports a single track until within 150 feet of the entrance to the open-hearth building. Here a branch track leads out, enters the open-hearth building and runs its entire length along that side of the charging floor which is farthest away from the furnaces; the main approach track enters the open-hearth building and runs its entire length, the nearest rail being about three feet from the front of each furnace. Both tracks are connected by means of a cross-over which is installed opposite Nos. 2 and 3 furnaces. Underneath the trestle are storage bins for limestone. When the scrap is to be charged the buggies are spotted on the track nearest the furnace. Each furnace is equipped at the front side with five cast-iron water-cooled doors through which the pig iron and scrap are introduced. An electrically-operated low-type charging machine which was

FIG. 1—APPROACH SIDE OF THE 36-INCH, ELECTRICALLY-DRIVEN BLOOMING MILL

built by the Wellman-Seaver-Morgan Co., Cleveland, picks up the boxes, and dumps the scrap onto the hearth. The latter slopes from all sides toward the tap-hole which is situated at the back of the furnace below the middle working door.

Producer gas is used for melting the charge. The producer plant which is located between the open-hearth and stock-house buildings, consists of four batteries, each housed in a separate building. An aggregate of 15 producers are provided, two units serving each furnace with the exception of No. 1 battery and this is equipped with five producers for supplying gas to No. 1 and 2 open hearths. The gases generated in the producer make their exit through a gooseneck which is connected on the outside of the producer building to a manifold pipe, 6 feet internal diameter. From this manifold the gases are led to the open-hearth furnaces for combustion. The air and gases, after passing through heated regenerators, are admitted to the hearth at one end through ports; after combustion the waste gases pass from the hearth through ports at the opposite end and in turn through other regenerators to a chimney, 7 x 156 feet. The course of the gases is reversed from one end to the other of the furnace approximately every 20 minutes, by means of electrically-operated 30-inch reversing valves. The latter were built by the Blair Engineering Co., New York.

The regenerators are operated in pairs and are built transversely beneath the furnace bottom. They consist of one large and one small chamber; the air passes through the former and the gases through the latter on their way to the furnace. The products of combustion are drawn downwards by the chimney draft from the top to the bottom of the regenerators, or in the reversed direction to that traversed by the gases and air on their way to the furnace hearth. The waste gases instead of escaping to the chimney at the temperature of the furnace, give up in their passage over the checker work of the regenerators a large proportion of their sensible heat, and finally pass to the stack at a temperature of approximately 300 degrees Fahr. In this manner, the upper tiers of the regenerator bricks are heated to a temperature only slightly lower than that of the furnace while the courses of brickwork, lower down and farthest away from the furnace, become successively less heated.

As each heat of steel is brought up to the desired analysis, it is cast from the furnace. The furnace discharges into a 125-ton ladle. The tap-hole is opened for tapping the heat by drilling out as much as possible of the stopping mixture, and finally breaking through the hole with a pointed bar. When the ladle becomes filled, the slag which floats on the top of the steel, drains onto a spout permanently attached to the ladle. This spout directs the molten slag onto another spout, attached to steel girders, which in turn discharges into a 20-ton cast-iron thimble. Immediately below the end of the tapping runner is a slag pit into which the slag is allowed to drain on the withdrawal of the ladle from beneath the spout after the whole of the molten metal has run from the furnace. Each furnace is equipped with an electrically-operated jib crane which is used for swinging the casting spout out of the way when it is desired to make up the tapping hole for the next cast.

Two 175-ton traveling cranes which have a 54-foot span serve the pouring bay. These as well as all cranes in the steel plant were built by the Alliance Machine Co., Alliance, O. The pouring platforms are built so that their level is slightly higher than the ingot molds when in position to receive the steel. The molds are made of cast iron and are square in transverse section. They are made with considerable taper from top to bottom so as to allow the ingots to be readily stripped shortly after pouring. Six molds, three on each side, are carried on a truck.

The Pouring Operation

After the heat of steel has been poured, the mold train is pulled out of the open-hearth building by a small engine and taken to a track scale located 125 feet from the southern end of the pit-furnace building. After weighing, the train is pushed straight ahead into the pit-furnace building. The latter is 83 1/3 x 475 feet and houses the soaking-pit and stripping departments. Two 5-ton pit and one 150-ton stripping crane serve both departments. After the ingots are withdrawn from the molds by means of the crane-type stripper they are picked up by one of the pit cranes and placed in the soaking pits. This is done because the ingots are far too hot in the interior for immediate rolling. If allowed to stand in the open until their interior had cooled sufficiently, the ingots would be found much too cold for rolling purposes. The soaking provides a uniform distribution of the excess heat stored up by the fluid metal and hence a sufficiently high temperature is obtained for rolling the ingot in the blooming mill and afterwards for passing it through the finishing rolls.

Six four-hole pits are provided in the soaking pit building. Each of the holes accommodate eight 6600-pound ingots, giving a soaking capacity of 23 tons each. Heat is furnished by producer gas delivered through overhead pipe lines. Valves for reversing the direction of the gas are located on the pit floor level at the side of the building. They were built by the Blair Engineering Co., New York. Between the platform where these valves are controlled and the pits is a depressed track for the ingot chariot. The main gas line from the producers is supplied by separate pipes from each of six producers. This main line or manifold is intersected by six lines, leading to each of the pits. This affords positive control into and out of the operating shed although it is unit and to each of the pits.

The pit covers are electrically operated from the gas-valve platform, which is designated as the valve-operating shed although it is united with the pit building. A signal whistle operated from the blooming mill pulpit advises the soaking-pit department when ingots are needed. Upon receiving this signal the cover is removed from that pit in which the ingots have reached the proper state of uniform heat. The pit crane then lifts the ingot and swings it over the depressed trackway where it is deposited upon an electrically-driven ingot chariot. It is then transferred to the blooming mill. Formerly the transfer of ingots from the soaking pits to the blooming-mill approach tables was made by means of cranes but in later types of mill construction these are supplanted by mechanical-driven chariots. The latter are more efficient especially where the haul is comparatively long inasmuch as the pit crane movement is cut to a minimum.

The distance from the soaking-pit building to the blooming-mill approach table is only 24 feet. This is, of course, the shortest distance from the nearest pit. At the end of the 108-foot approach table, the ingot is automatically tripped upon the rollers of the approach table. By means of the latter, the ingot is transported to within a few feet of the blooming mill and positioned between the front table side guards which guides it between the desired section of the rolls. The side guards are electrically controlled from the pulpit and are supported on massive steel posts. The latter are securely fastened to girders which are built with racks,

FIG. 2—POURING BAY OF THE 7-UNIT, OPEN-HEARTH PLANT WHICH IS SERVED BY THE TWO 120-TON CRANES. LADLES IN THE FOREGROUND HOLD 100 TONS OF METAL

stop lugs and separators. The pulpit spans the approach table on the entering side of the blooming mill. Ample room is provided for the motor and manipulator operator, and the roller. Near the pulpit and about on the same level is a building which houses the motor breaker equipment used in conjunction with the operation of the kick-up fingers, left and right side guards, front and rear table rollers and screwdowns.

A unique feature of the mill is the construction of the side guards. These usually have square sections at the ends nearest the rolls. In this installation, the ends have been tapered to a wedge section, with the straight edge down. If on the return pass, the semifinished material strikes the end of a side guard, it is shot upward, without damage, instead of buckling as is the case in the square-end type. The ingot after passing between the rolls from front to rear is received at the rear side on a roller table which is also served with a pair of side guards. After the rolls are reversed the ingot is run between and returns to the front side. Kick-up fingers are provided between the rollers of the front and rear tables and are controlled electrically from the rolling pulpit.

A great deal of time is saved by having a set of kick-up fingers on each side of the mill because with only one set installed, dummy passes would be necessary in order to make a turn over. After each pass the upper roll is uniformly fed down in order to give the desired gage for each pass. This is done by means of electrically-driven screwdowns, the speed being controlled magnetic-

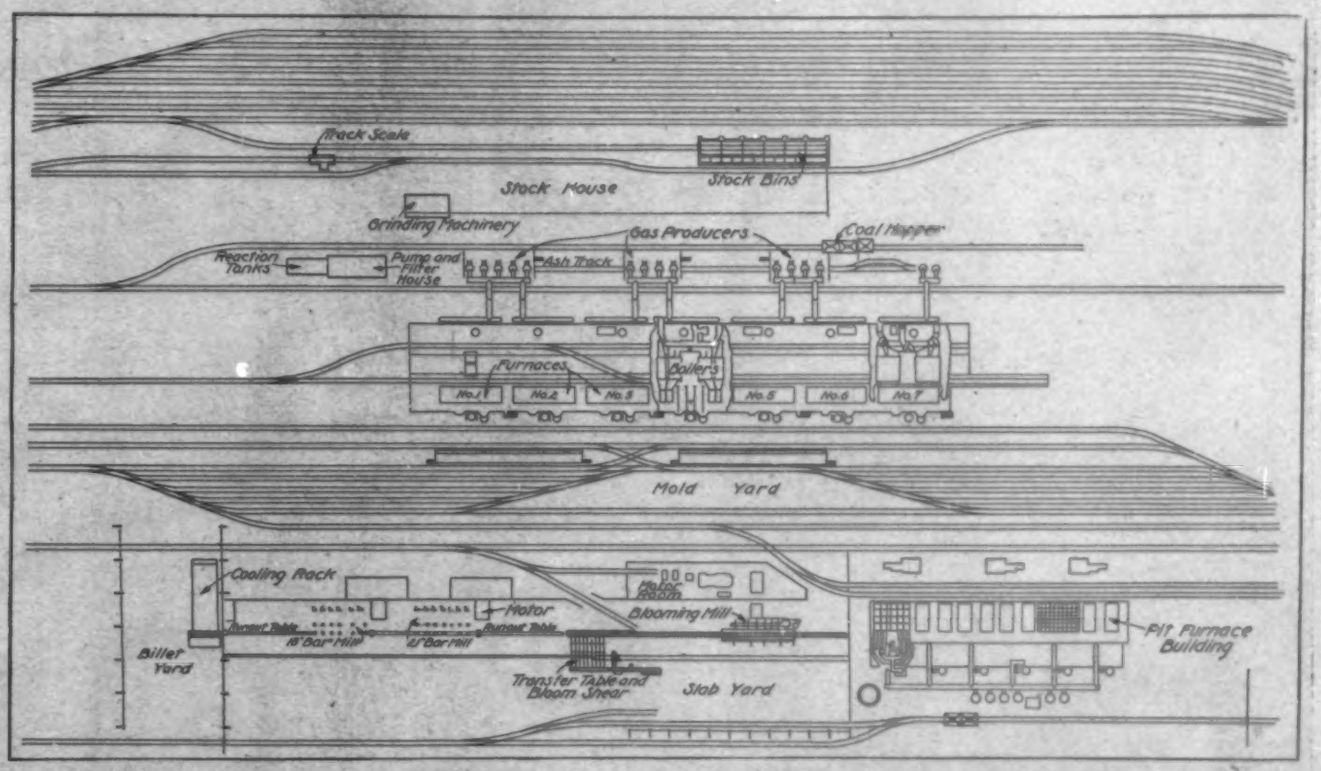


FIG. 3—GENERAL LAYOUT OF THE TRUMBULL STEEL CO.'S NEW STEEL PLANT WHICH INCLUDES SEVEN 100-TON OPEN-HEARTH FURNACES, A 36-INCH BLOOMING MILL AND AN 18 AND 21-INCH BAR MILL

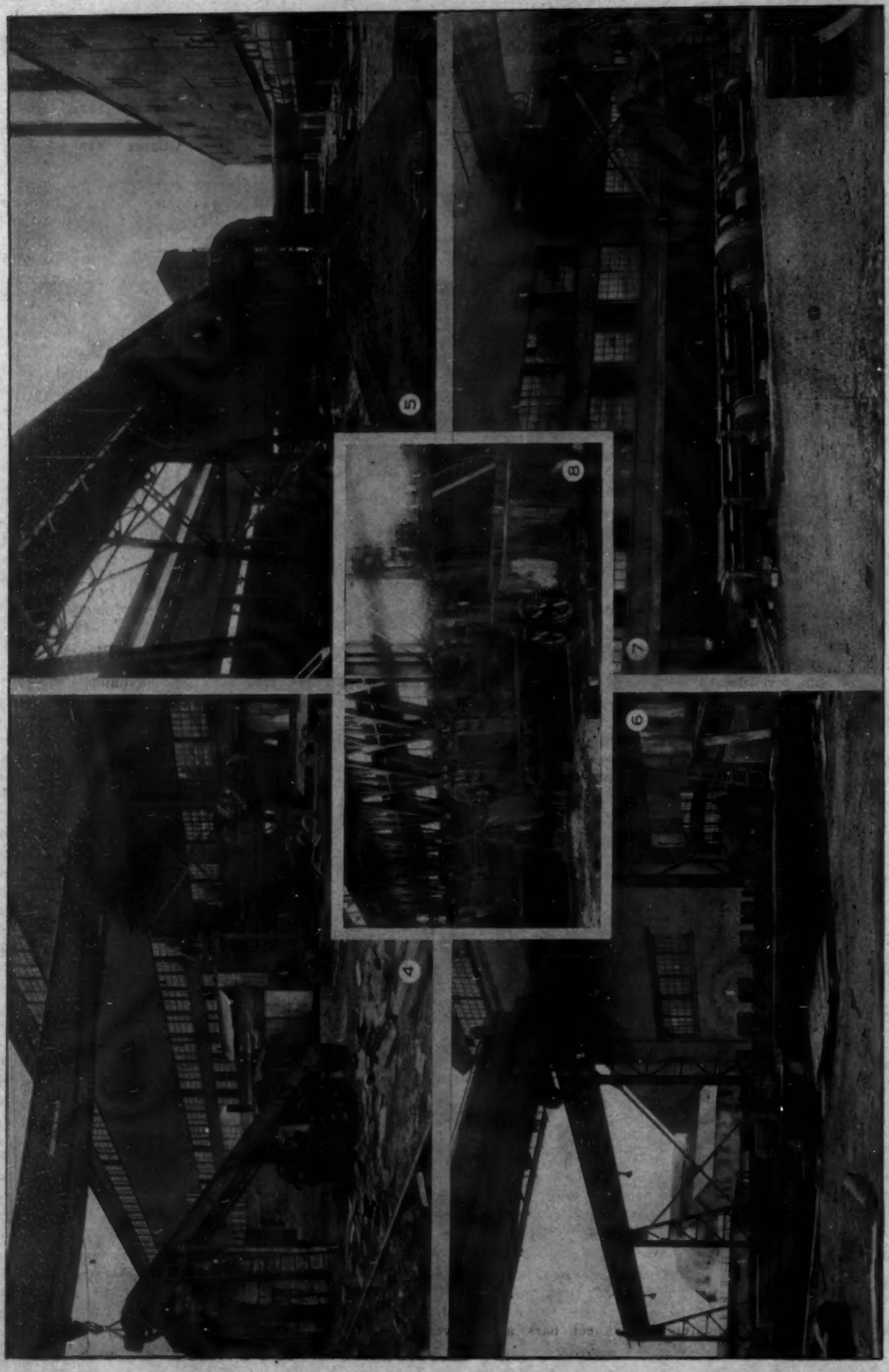


FIG. 4—SECTION OF SLAB YARD WHERE BILLETS AND SLABS ARE SHEARED IN SPECIFIED LENGTHS. CONVEYOR LOADS THE CROPPING INTO CARS. FIG. 5—PART OF GAS-PRODUCER PLANT WHICH INCLUDES FIFTEEN 10-TON UNITS. FIG. 6—COOLING BEDS FOR THE 18 AND 21-INCH BAR MILLS. FIG. 7—TRANSFER TABLE OVER WHICH SLABS AND BILLETS ARE CONVEYED FROM THE MILL TO THE STORAGE AND LOADING YARD. FIG. 8—REAR OF THE 18-INCH BAR MILL

ally from the pulpit. The screwdowns are operated by means of a compound-wound, 100-horsepower, mill-type motor which is placed at the right of the mill and supported on cross girders. Connection is had through the necessary reduction gears and a shaft fitted with couplings. Between these couplings is a worm and worm wheel which operates a dial used for indicating the gage between the rolls. The latter is in plain view from the roller's pulpit.

Complete Control Necessary

The compound winding of the screwdown motor, heretofore mentioned, protects the motor from running away when the screwdowns are being elevated for at this stage the motor is operating practically without a load. The motor is also equipped with solenoid brakes which aid the roller in catching the gage of the rolls quickly. The upper roll is indirectly connected to an individual accumulator which automatically exerts a counterbalance pressure of approximately 500 pounds per square inch. On this mill 19 passes are usually required to convert an ingot into an 8 x 2-inch bar while 14 passes are required for a 17 x 3-inch slab. The mill has a monthly rolling capacity of approximately 40,000 tons.

The blooming mill was built by the United Engineering & Foundry Co., Pittsburgh. It is a 36-inch, two-high type. The rolls are connected by means of spindles to nickel-steel reduction gears which in turn are operated by means of a jackshaft directly connected to a 5000-horsepower reversing motor. The latter was built by the General Electric Co., Schenectady, N. Y.

Safety features have had full consideration in building the mill tables. Along the entire mill building, tunnels are constructed at intervals which allow workmen to pass freely and with safety under the roller tables while they are in operation. In addition, heavy-gage steel plates hinged at their bottom edge are placed along the side of the bevel gears which operate the roller tables. These plates open outward to allow a man to reach and grease the gears when it is desired. Further, on each side of the blooming-mill rolls a protective curtain of chain is suspended. This curtain serves to protect the men from flying particles of scale which result when the hot steel comes in contact with the water about the rolls.

From the blooming mill to the cropping shear is approximately 150 feet. This shear is used only to crop the ends of the drawn out billets or slabs when they leave the blooming mill. The shear is operated by an electric motor through reduction gears. The head of the shear is operated hydraulically. In event that billets or slabs are to be sold after their ends are cropped, they are passed over a hook and rail-type transfer table to a table outside the building. This table directs them to another electrically-driven shear which cuts them into integral sections according to specifications.

When sheet bars or tin-plate bars are wanted, however, the drawn out billet when it leaves the blooming mill, is directed straight ahead to the shear where its ends are cropped. It is then guided into a 21-inch mill where it is rolled preparatory to finishing. Four passes through this mill give the oval shape and one set of passes through the six-stand 18-inch mill produces the finished bar. As the bar issues from the last set of rolls and passes down the runout table it is cut in specified lengths by means of an Edwards-type flying shear. The latter makes the cut without checking the progress of the moving bar. The stroke is made by a piston operated by a steam cylinder. The speed of the piston is such that the blades, while cutting, travel at exactly the speed of the bar. After the cut is made, the top blade swings out of the way of the advancing bar and the return stroke of the piston brings the blades back into the starting position.

The 18 and 21-inch mills were built by the Morgan Construction Co., Worcester, Mass. The 18-inch mill is driven through a common shaft and bevel gears by a 3500-horsepower motor manufactured by the General Electric Co., Schenectady, N. Y. The bevel gears are housed in heavy-gage sheet-steel cages as a safety measure. The 21-inch mill is a four-stand continuous train of rolls and is built to produce slabs and billets in sizes under 12 x 3 and 4 x 4, respectively. Sheet bars from 8 to 12 inches wide and billets from 1½ to 3 inches wide are rolled on the 18-inch six-stand continuous mill which has a monthly capacity of about 40,000 tons. Edger rolls are placed in front of No. 1 stand and between Nos. 2 and 3 stands. The blooming mill and the two bar mills just mentioned are housed in a building 70 x 740 feet.

The final runout table about 100 feet in length, delivers the bars to straightening rolls located just inside the mill building. Here the sheet bars are delivered to a cooling rack, from which pick-up cradles lifted by the yard crane, serve to handle them to stock piles adjacent. The bars are weighed on a 60,000-pound scale at the end of the cooling table. The cooling rack is served by a 15-ton traveling crane with a span of 120 feet. The crane was built by the Alliance Machine Co., Alliance, O.

The company besides manufacturing ingots, blooms, billets, slabs, and sheet bars also produces blue annealed, black and galvanized sheets; coke tin plate; long terne sheets, with 8, 12 and 15-pound coatings; and strip steel, both hot and cold rolled for drawing and stamping purposes. The annual capacity of the Trumbull Steel Co.'s mills is 300,000 tons. With acquisition of ore reserves of about 5,000,000 tons in the Lake Superior district, the company is now self-contained with the exception of a blast furnace department.

At the annual meeting of stockholders of the Trumbull Steel Co., held in Warren, O., Feb. 4, the following officers were elected: Jonathan Warner, president; W. H. B. Ward, Philip Wick and A. N. Flora, vice presidents; William M. McFate, secretary, and Lloyd Booth, treasurer. T. P. Draper is general manager.

Raise British Tin Plate

A new list of maximum prices for tinplates and terneplates, with the exception of Staffordshire tinplates, has been issued by the minister of munitions, superseding the list of Aug. 24, 1917. A sum not exceeding 2 per cent of the prices may be added in the case of sales made by persons other than the makers or their agents, plus the actual cost of delivery from works to destination. In no case must the cost to the ultimate consumer be beyond 2 per cent over the maximum prices, plus transportation charges. Holders of merchant stock delivering from their own warehouses are permitted to sell at the maximum prices, plus the maximum addition of 7½ per cent, exclusive of transportation. This 7½ per cent will include the merchants' commission of 2 per cent. The new prices do not apply to sales and purchases for export, except in the case of sales and purchases made through official agencies for allied governments.

The revised prices are as follows: Coke tinplates, I.C. 20 x 14, 112 sheets, 108 pounds, 33s 3d ($7.98); D.C. 25 x 17, 50 sheets, 94 pounds, 32s 3d (7.74); S.D.C. 22 x 15, 100 sheets, 163 pounds, 48s 9d ($11.70). Terneplates—31s 3d ($7.50) per basis box, or 4 cents per box less than tinplates. All the prices represent an increase of 18 cents.

1918 Lake Superior Ore Shipments

All-Rail Movement of 1,679,350 Tons Brings Season's Total to 62,836,082 Tons—Official Figures Showing Tonnage Forwarded by Each Mine and by Ranges Last Year

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BY R. V. SAWHILL

RAIL shipments of iron ore from mines in the Lake Superior district in 1918 aggregated 1,679,350 tons, bringing the total movement for the year up to 62,836,082 tons. Last year's shipments showed a loss of 1,600,921 tons from 1917 when 64,437,003 tons were forwarded. The decrease from the record year of 1916 amounts to 3,822,384 tons. Last year showed a decline of 2.48 per cent from 1917, which had registered a decrease of 3.33 per cent from 1916 movement, which in turn had shown a gain of 41.01 per cent over 1915. The totals for 1918 have just been determined by the official figures compiled by THE IRON TRADE REVIEW.

Comparative Shipments by Ranges, 1918-1917

	1918	1917	Decrease
Mesabi	40,396,711	41,445,211	1,048,500
Menominee	6,378,698	6,045,750	*332,948
Gogebic	7,936,701	7,981,684	44,983
Marquette	4,354,207	4,874,150	519,943
Vermillion	1,192,908	1,530,692	337,784
Cuyuna	2,478,800	2,422,884	*55,916
Mayville and Baraboo	98,057	136,632	38,575
Totals	62,836,082	64,437,003	1,600,921
By lake	61,156,732	62,498,901	2,221,463
By rail	1,679,350	1,938,102	*620,542

*Increase.

Lake shipments of iron ore in 1918 totaled 61,156,732 tons, as against 62,498,901 tons in 1917, a loss of 1,342,169 tons. The all-rail movement was 1,679,350 tons, a decrease of 244,918 tons compared with the record movement by rail of 1,924,268 tons in 1917. Rail shipments last year showed the lowest total since 1915. The following table gives the record of shipments by rail since 1908:

ALL RAIL SHIPMENTS

	Gross tons		Gross tons
1918	1,679,350	1913	876,638
1917	1,938,102	1912	785,769
1916	1,924,268	1911	662,719
1915	953,947	1910	813,639
1914	707,829	1909	903,270

Of the total tonnage moved from the Lake Superior district, independent companies are credited with 58.34 per cent, or 16.68 per cent more than the shipments of the United States Steel Corp. In 1917 the independents forwarded 55.66 per cent, and in 1916, 52.48 per cent. The 1918 figure exceeds 1917 by 2.68 per cent and is the highest on record since the formation of the Steel corporation. Last year was the seventh successive year in which the independent companies have moved more than one-half of the ore shipped from the Lake Superior district. In 1915 the independents shipped 52.37 per cent of the total, compared with 50.99 in 1914, 50.94 in 1913 and 50.54 in 1912. In one other year since 1905 have the independents shipped the majority of the tonnage, that being in 1910, when their percentage was 50.14. The percentage in 1906 was 47; 1907 and 1908, 44; 1909, 49.64, and 1911, 47.30. The strength of the independent ore interests is clearly revealed by their record of having forwarded more than one-half of the season's tonnage in eight of the last nine years.

The following table shows the shipments and percentages of the Oliver Iron Mining Co., the Steel corporation's mining organization, for each of the last 11 years:

OLIVER I. M. CO. SHIPMENTS

Year	Gross tons	Percentage
1918	26,178,782	41.66
1917	28,571,977	44.34
1916	31,673,131	47.52
1915	22,518,613	47.63
1914	16,039,654	49.01
1913	24,502,244	49.06
1912	22,845,363	49.46
1911	17,283,499	52.70
1910	21,661,143	49.86
1909	21,397,866	50.36
1908	14,123,957	50.00
Total	247,795,229	48.42

Iron ore shipments from the Mesabi range in 1918 amounted to 40,396,711 tons, as against 41,445,211 tons in 1917, a loss of 1,048,500 tons. Its percentage of the total shipments was 64.29, or practically the same as the 1917 percentage of 64.32. In 1916, this range shipped 63.80 per cent; 62.95 in 1915; and 65.62 in 1914. The Gogebic range was again the second largest shipper, forwarding 7,936,701 tons, a loss of 44,983 tons compared with the 1917 total of 7,981,684 tons. Its percentage for 1918 was 12.63, as against 12.39 in 1917; 12.74 in 1916; 11.59 in 1915, and 10.90 in 1914. Shipments from the Marquette range also fell below the tonnage reported for the previous year. The movement from this range amounted to 4,354,207 tons, and in 1917 it was 4,874,150 tons, a loss of 519,943 tons. Its percentage was 6.93, compared with 7.56 in 1917; 8.09 in 1916; 8.68 in 1915; and 7.61 in 1914. The Vermillion range shipments totaled 1,192,908 tons, a loss of 337,784 tons compared with 1917, when it forwarded 1,530,692 tons. Its percentage was 1.90, against 2.38 in 1917; 2.92 in 1916; 3.67 in 1915; and 3.10 in 1914.

Although the Menominee and Cuyuna ranges were the only ones forwarding a larger tonnage of ore than in the previous year, shipments from all ranges, except the Vermillion, ran well above the average maintained in the years immediately before the war. Menominee shipments increased to 6,378,698 tons, or 332,948 tons above the 1917 figure of 6,045,750 tons. Its percentage was 10.15, as against 9.38 in 1917; 9.55 in 1916; 10.54 in 1915; and 9.83 in 1914.

Shipments from the Cuyuna range continue to increase and were more than double those from the Vermillion, which it exceeded for the first time in the previous year. The tonnage forwarded from the Cuyuna last year reached a total of 2,478,800 tons, a gain of 55,916 tons compared with the 1917 total of 2,422,884 tons. The Cuyuna's percentage of the total shipments in 1918 was 3.94, compared with 3.76 in 1917; and 2.57 in 1916. In 1915, the Cuyuna's percentage was 2.40, and in 1914, 2.62.

Twelve mines shipped more than 1,000,000 tons last year, these mines being the Adams, Canisteo, Fayal, Hull-Rust, Kerr, Mahoning, Missabe Mountain, and Morris, on the Mesabi; Newport, Norrie Group and Wakefield, on the Gogebic and Cleveland-Cliffs group on the Marquette. In

Official Record of Shipments from Lake Superior District in 1918 and 1917, Gross Tons

MESABI RANGE

	1918	1917
*Aad	23,277	49,021
Adams	1,084,985	1,546,546
Adriatic	37,189	90,283
Agnew	97,921	110,001
Albany	493,985	455,182
Alexandria	210,108	136,795
Arcturus	295,546	314,049
Bangor	122,621	155,053
Belgrade	197,366	218,596
Bennett	872,421	783,826
Biwabik	496,061	342,570
Bray	137,834	56,011
Brunt	257,597	112,289
Burns	81,364	.....
Burt	747,968	692,017
Canisteo	1,426,399	1,643,226
Cavour	.....	5,043
Chester	346,540	354,824
Chisholm	322,528	382,184
Clark	198,265	266,710
Commodore	244,247	405,827
Corsica	384,692	389,083
Crosby	185,558	187,938
Cyprus	21,649	29,024
Dale	.....	10,423
Deacon	71,154	117,711
Dean	801,904	769,660
Duncan	5,159	5,013
Dunwoody	625,877	369,739
Elba	81,236	122,459
Elizabeth	27,860	.....
†Emmett	29,361	15,977
Fault	133,266	83,710
Fayal	1,366,083	2,037,705
Fowler	42,752	11,137
Franklin	32,888	73,855
Frantz	169,777	78,302
Genoa	177,978	180,923
Glen	613,571	443,446
Grace	81,953	81,815
Graham	.....	238,904
Grant	117,407	.....
Hanna	111,212	136,114
Harold	280,495	145,966
Harrison	9,977	19,251
Hartley-Burt	954,154	310,264
Hawkins	612,378	721,211
Helmer	207,498	259,777
Hill Annex	559,074	250,889
Holland	4,675	6,523
Holman	736,527	835,464
Hudson	84,744	78,963
Hull-Rust	5,452,585	6,461,443
Itasca	104,858	197,472
Jean	26,688	78,522
Judd	.....	50,278
Julia	140,803	43,694
Kerr	2,027,589	1,586,409
Kevin	21,602	35,846
Kinney	203,542	184,591
Knox	25,967	78,266
LaBelle	72,974	71,546
Lamberton	655	20,187
Langdon & Warren 40	12,576	12,792
LaRue	295,916	330,349
Laura	141,736	105,515
Leetonia	230,865	402,868
Leonard	737,209	805,537
Leonard-Burt	.....	448
Leonidas	656,735	795,826
Lincoln	295,677	276,678
Lone Jack	4,106	.....
Mace	313,948	373,780
Madeira	.....	7,125
Madrid	18,258	43,943
Mahoning	2,024,505	2,524,110
Majorca	251,707	112,394
Margaret	43,933	.....
Mayas	4,382	.....
Meadow	52,515	96,191
Midget	.....	113,003
Miller	329,161	313,875
Missabe Mt.	1,173,311	62,931
Mississippi	188,255	99,983
Mohawk	255,415	267,204
Monroe-Tener	275,815	.....
Morris	1,044,558	1,605,701
Morrow (new)	94,009	69,554
Morton	.....	1,832
Myers	12,216	41,974
Nassau	40,412	.....
Norman	70,494	128,861
North Eddy	124,649	163,974
No. Harrison	261,391	305,810
Ordean	100,517	383,968
Patrick	236,776	95,888
Pearson	67,794	9,443
Penobscot	519	.....
Perkins	50,807	80,942
Pettit	258,174	192,920
Philbin	233,484	204,510
Quinn	174,643	85,297
Ruddy	.....	3,331
Saintry-Alpena	531,427	596,049
Schley	.....	777
‡Section 18-58-16	747	.....
‡Section 19-58-16	274	.....
Sellers	865,070	1,575,057
Seville	7,704	.....
Shaw	.....	1,841
Shenango	525,301	680,258
Shiras	125,549	191,042
Sliver	119,023	168,953
Smith	39,292	253,223
Spruce	562,116	352,563
St. James	242,301	184,885
Stevenson	323,907	344,872
Susquehanna	569,630	609,198
Thorne	44,904	74,997
Tioga	62,678	80,758
¶Trespass	12,461	.....
Union	222,736	229,380
Uno North	82,954	177,028
Uno South	130,483	99,992
Utica	282,854	245,314
Victoria	72,478	71,597
Wacootah	174,342	73,908
Wade	67,576	.....
Wanless	175,588	195,552
Warren	195,008	94,030
Webb	157,701	210,593
Weed	46,347	87,111
Whiteside	1,843	31,301
Wills	17,662	.....
Winifred	.....	16,249
Wisstar	20,609	.....
Woodbridge	209,414	236,442
York	123,834	55,131
Total	40,296,711	41,445,211

*Formerly Rutland.

†Formerly Atlas.

‡Trespass on undeveloped property; not new mines.

¶Trespass on SW ¼ of NW ¼, 4-58-15 undeveloped property; not a new mine.

MENOMINEE RANGE

	1918	1917
Amasa-Porter	65,794	116,148
Antoine (Clifford)	118,494	115,833
Aragon	305,726	276,434
Balkan	262,293	261,014
Baltic	141,903	89,307
Bates	98,194	141,890
Bengal	303,788	260,377
Berkshire	38,439	57,791
Bristol (Claire)	245,151	188,907
Carpenter	384,148	269,387
Caspian	346,028	411,705
Chapin	705,803	682,349
Chatham	246,648	244,934
Chicagon	109,574	90,786
Davidson	113,779	223,990
Ernst	173,155	70,416
Florence	97,322	47,193
Fogarty	24,979	37,291
Gt. Western	63,449	7,692
Hiawatha	126,962	62,847
Hilltop	32,164	36,239
Homer	213,059	202,351
Indiana	53,401	46,480
James	201,090	171,001
Judson	195,938	60,235
Loretto	155,891	193,950
Monongahela	25,739	.....
Munro	53,031	46,960
Odgers	257,637	169,668
Penn Iron Mining Co.	210,632	459,784
Pewabic	113,999	153,256
Ravenna	.....	37,848
Richards	56,087	43,890
Riverton Group	100,496	.....
Rogers	84,196	117,323
Spies	48,782	6,310
Tobin	202,775	188,590
Tully	125,087	121,426
Virgil	40,321	.....
Wapama	5,071	16,032
Warner	78,855	74,814
Wickwire	.....	242
Youngs	2,601	23,197
Zimmerman	145,217	219,373
Total	6,378,698	6,045,750

MARQUETTE RANGE

	1918	1917
Adams (Amer. Min. Co)	32,924	22,560
American (Sterling)	120,756	142,526
Athens	20,923	.....
Austin	8,533	44,421
Beaufort (Ohio)	3,229	108,901
Breitung (Hematite)	195,428	191,952
Bunker Hill	2,172	.....
Cambria	143,305	114,031
Cleveland Cliffs Group	1,050,147	946,410
Empire	45,947	38,392
Francis	30,774	.....
Gwynn	182,540	188,070
Holmes	117,900	53,726
Isabella	84,953	63,446
Jackson	15,879	47,836
Lake Angeline	50,947	54,673
Lake Superior	345,708	312,459
Maas	354,709	313,399
Maitland	19,625	.....
Mary Charlotte	273,650	247,854
Morris-Lloyd	315,541	303,253
Negaunee	501,965	573,760
Princeton	.....	.....
(Swanney)	66,243	150,375
Queen Group	.....	88,178
Republic	151,170	168,250
Richmond	144,104	148,834
Stegmiller	.....	41,526
Stephenson	75,164	496,713
Washington	.....	12,605
Total	4,354,207	4,874,150

GOGEBIC RANGE

	1918	1917
Anvil	14,131	54,407
Ashland	48,802	38,104
Asteroid	121,152	93,265
Brotherton	6,905	84,524
Cary	231,523	253,260
Castile	73,065	82,248
Colby	324,731	353,820
Davis (Wis.)	2,820	28,234
Eureka	189,696	191,630
Geneva	126,250	113,804
Ironton	184,627	244,517
Keweenaw	142,037	130,374
Mikado	.....	30,833
Montreal	298,896	458,658
Newport	1,041,697	1,003,229
Norrie Group	1,550,802	1,646,606
No. Newport	728	13,737
Ottawa (Odanah)	255,782	215,401
Palms	674,460	481,465
Plymouth	821,867	658,205
Puritan	218,243	224,082
Royal	33,561	30,302
Sunday Lake	131,425	198,144
Tilden	126,149	103,641
Townsite	83,428	25,070
Wakefield	1,130,432	1,144,411
Yale (West Colby)	103,491	73,633
Total	7,936,701	7,981,684

VERMILLION RANGE

	1918	1917
Chandler	234,635	202,828
Consolidated Vermillion	1,621	16,464
McComber	3,622	4,068
Pioneer	260,516	352,497
Section 30	125,423	223,123
Sibley	149,125	198,378
Soudan	124,873	150,668
Zenith	243,093	382,666
Total	1,192,908	1,530,692

CUYUNA RANGE

	1918	1917
Adams	5,535	.....
Algoma	22,044	22,097
Arko	740	.....
Armour No. 1	101,747	80,435
Armour No. 2	246,362	273,812
Bonnie Belle	1,040	.....
Brainerd-Cuyuna	3,199	.....
Croft	146,162	149,899
Cuyuna Mille-Lacs	158,075	113,554
Cuyuna-Sultana	64,916	62,651
Ferro	59,753	62,674
Hill Crest	118,812	175,940
Hopkins	37,257	.....
Ida Mae	4,917	.....
Ironton	39,968	64,446
Joan No. 1	1,116	3,490
Joan No. 4	25,421	4,875
Kennedy	202,826	247,421
Mahnomen	321,243	284,686
Mangan No. 1	43,007	49,868
Mangan No. 2	51,516	2,423
Martin	1,421	.....
Meacham	160,598	160,677
Merritt	80,261	28,003
Omaha	41,924	61,170
Pennington	164,629	165,895
Rowe	109,435	151,048
State Lease	152,649	81,394
Thompson	113,227	177,426
Total	2,478,800	2,422,884

MAYVILLE-BARABOO RANGES

	1918	1917
Cahoon	9,245	42,635
Mayville	88,812	93,997
Total	98,057	136,632

	1918	1917
GRAND TOTAL	62,836,082	64,437,003

Graphic Record of Shipments by Ranges for the Past 29 Years

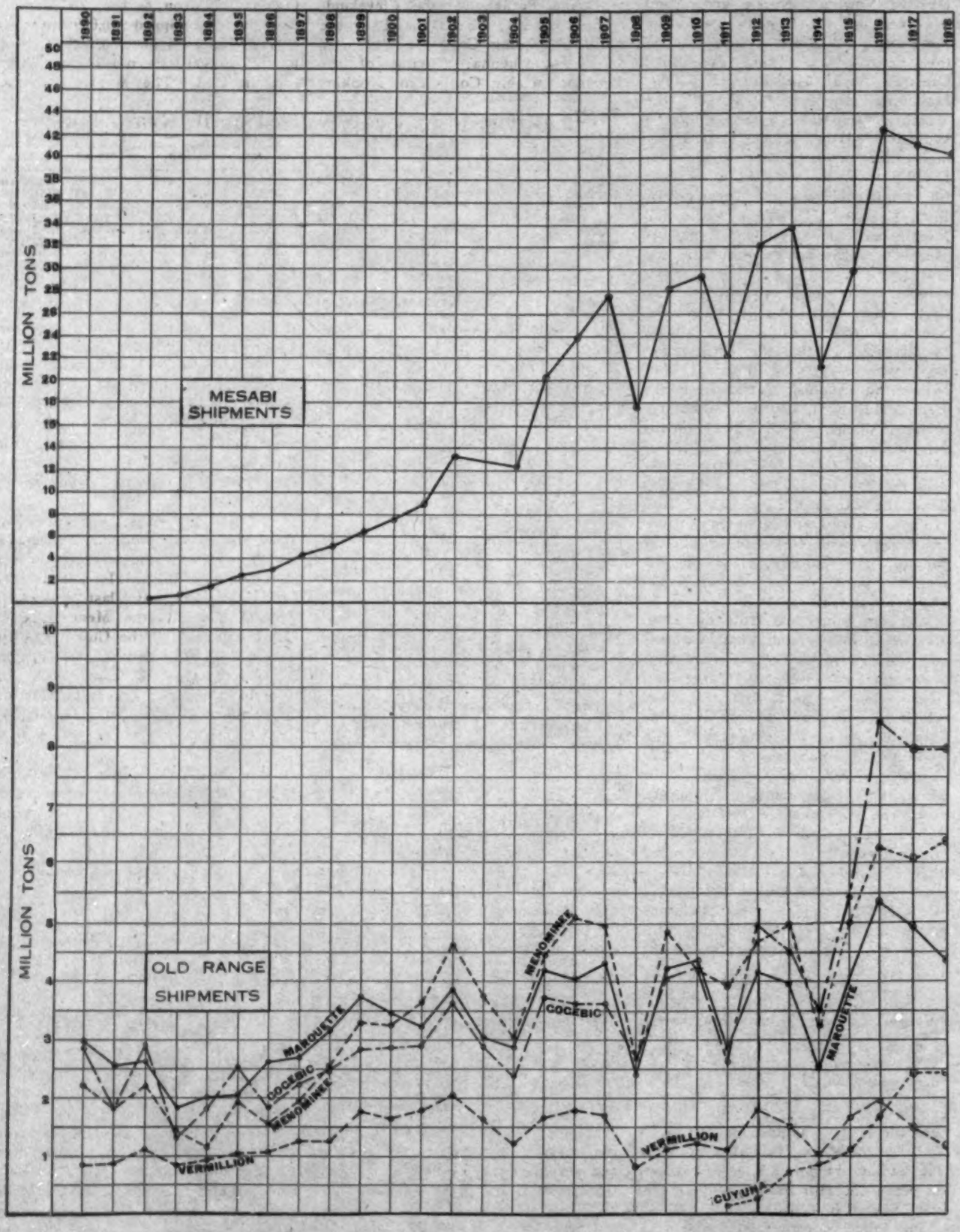


CHART SHOWING SHIPMENTS OF IRON ORE FROM MESABI RANGE, 1892-1918; OTHER RANGES, 1890-1918

1917, 11 mines shipped more than 1,000,000 tons, these being the Adams, Canisteo, Fayal, Hull-Rust, Kerr, Mahoning, Morris and Sellers on the Mesabi; Newport, Norrie group and Wakefield on the Gogebic. In 1916, there were 12 mines which reached this figure, these being the Burt, Canisteo, Fayal, Hull-Rust, Leonidas, Mahoning, Morris, and Sellers on the Mesabi; Newport, Norrie group and Wakefield on the Gogebic, and Cleveland-Cliffs group on the Marquette. In 1915 there were seven mines over the million-ton mark. These were, Burt, Canisteo, Hull-Rust, Mahoning, Morris and Sauntry-Alpena on the Mesabi and the Norrie group on the Gogebic. In 1914, only four mines shipped more than a million tons, these being the Leonard, Mahoning, Sauntry-Alpena and Canisteo, all on the Mesabi. In 1913, the seven-figure mark was reached by 11 mines, they being the Adams, Canisteo, Fayal, Genoa, Hull-Rust, Leonard, Mahoning, Sauntry-Alpena, and Uno South on the Mesabi; and Norrie group and Newport on the Gogebic. Eleven mines also reached this figure in 1912, they being the Canisteo, Dale, Genoa, Hill, Hull-Rust, Leonard, Mahoning, Sauntry-Alpena, and Uno South, on the Mesabi; the Norris group on the Gogebic, and the Cleveland-Cliffs group on the Marquette.

Although shipments from the Hull-Rust mine fell off somewhat last year, the tonnage forwarded by that mine was again an exceedingly large one. This mine shipped 5,452,585 tons, which is considerably above the total shipments from the Marquette, Vermillion or Cuyuna ranges, and is less than 1,000,000 tons below the Menominee shipments. Shipments from the Hull-Rust in 1917 were 6,461,443 tons, and in 1916, 7,665,611 tons. Two other mines shipped more than 2,000,000 tons last year, the Kerr, with 2,027,589 tons, and the Mahoning, with 2,024,675 tons. The Mahoning was the leading shipper in 1915, with 2,311,940 tons. The Hull-Rust has been the leading shipper in nine of the last 12 years, the Hill leading in 1911, and the Leonard in 1914.

The following new mines shipped in 1918:

On the Mesabi: Burns, of the Bowe-Burke Mining Co.; Margaret, of Butler Bros.; Wade, of Cleveland-Cliffs Iron Co.; and Wisstar, of Clement K. Quinn.

On the Marquette: Athens, Bunker Hill, and Francis, of the Cleveland-Cliffs Iron Co., and Maitland, of the Maitland Mining Co.

On the Cuyuna: Adams of the Biwango Mining Co.; Arko, Hopkins and Martin, of Clement K. Quinn; Bonnie Belle, of the Liberty Mining Co.; Brainerd-Cuyuna, of the Brainerd-Cuyuna Mining Co.; and Ida Mae, of the Merritt Development Co.

The total of 15 new shippers in 1918 is five less than in 1917, and seven less than in either 1916 or 1915, when the number of new mines opened was 22. In 1914 there were 16 new mines opened; 20 in 1913, and 13 in 1912. Four of the mines shipping for the first time last year are located on the Mesabi, four on the Marquette, and seven on the Cuyuna. Shipments from new mines totaled 341,085 tons in 1918, compared with 1,737,759 tons in 1917. In 1916 these shipments totaled 2,357,850 tons; 1,203,213 in 1915, and 677,182 tons in 1914.

Shipments from the Canadian mines in 1918 were as follows: Helen, of the Algoma Steel Corp., 4221 tons; Magpie, of the Algoma Steel Corp., 156,790 tons; and Moose Mountain, of Oglebay, Norton & Co., 26,777 tons. The Helen shipped 90,059 tons in 1917, 37,272 tons in 1916, 220,771 tons in 1915, 80,860 tons in 1914, and 42,550 tons in 1913. The Moose Mountain which was idle in 1917, shipped 5338 tons in 1916, 40,444 tons in 1915, 29,457 tons in 1914, and 102,238 tons in 1913. The Magpie shipped 174,774 tons in 1917, 187,809 tons in 1916, 107,560 tons in 1915, 98,070 tons in 1914, and 19934 tons in 1913. The shipments from the Canadian mines are not included in the total for the Lake Superior ore shipments.

In 1918 shipments were forwarded from 284 mines, compared with 246 in 1917. In 1916 there were 233 mines, 209 in 1915, 196 in 1914, 223 in 1913. Of those shipping last year, the Mesabi had 135, the Menominee 49, the Marquette 33, the Cuyuna 29, the Gogebic 27, the Vermillion 9 and the Mayville-Baraboo 2. In 1917, the Mesabi shippers numbered 122, the Menominee 41, Marquette 25, Gogebic 27, Cuyuna 21, Vermillion 8, and Mayville-Baraboo 2.

The following table shows the average shipments of all the mines on the six leading ranges of the whole Lake Superior district for 1918 and 1917, in gross tons:

AVERAGE MINE SHIPMENTS

	1918	1917
Mesabi	299,235	339,715
Gogebic	293,953	295,618
Vermillion	132,545	191,336
Marquette	131,946	194,966
Menominee	130,177	147,457
Cuyuna	85,476	115,375
Lake Superior district	222,475	261,939

Large Ore Chart

A CHART, 26 x 30 inches, has been published by THE IRON TRADE REVIEW, *which shows annual shipments of each mine since* 1899, *a period of* 20 *years, together with the grand total for every mine since the opening of the district. The chart is similar to those issued annually by* THE IRON TRADE REVIEW, *prior to* 1912, *but is larger, more complete and more legible. The chart can be secured from* THE IRON TRADE REVIEW, *Penton building, Cleveland, for* $1.

Pass Tunnel Bill

The New York state assembly, on Feb. 26 passed the New York-New Jersey vehicular tunnel bill. This measure provides for the acquisition of lands and the acquisition of a tunnel or tunnels under the Hudson river jointly with New Jersey, for vehicular and pedestrian traffic. This provides an appropriation of $1,000,000 for beginning the work. It is expected that the tunnel to be constructed will be of cast iron segments like the present tunnels in New York harbor.

Shipments by Port and All Rail, Gross Tons

	1918	1917	1916	1915	1914	1913
Escanaba	6,774,969	7,156,854	7,457,444	5,649,289	3,664,451	5,399,444
Marquette	3,457,054	3,207,145	3,858,082	3,099,589	1,755,736	3,137,617
Ashland	7,565,608	7,597,841	8,057,814	5,146,772	3,363,419	4,338,230
Two Harbors	8,723,472	9,990,901	10,735,853	8,642,943	5,610,262	10,075,718
Superior	14,068,341	13,978,741	12,787,046	8,342,793	11,309,748	13,788,343
Duluth	20,567,288	20,567,419	21,837,949	15,437,419	6,318,291	12,331,126
Total by lake	61,156,732	62,498,901	64,734,198	46,318,804	32,021,897	49,070,478
Total by rail	1,679,350	1,938,102	1,924,268	953,947	707,829	876,638
Total	62,836,082	64,437,003	66,658,466	47,272,751	32,729,726	49,947,116

Shipments by Ranges, Gross Tons

	1918	1917	1916	1915	1914	1913
Marquette	4,354,207	4,874,150	5,396,007	4,105,378	2,491,857	3,966,680
Menominee	6,378,698	6,045,750	6,364,363	4,982,626	3,221,258	4,965,604
Gogebic	7,936,701	7,981,684	8,489,685	5,477,767	3,568,482	4,531,558
Vermillion	1,192,908	1,530,692	1,947,200	1,733,595	1,016,993	1,568,600
Mesabi	40,396,711	41,445,211	42,525,612	29,756,689	21,465,967	34,038,643
Cuyuna	2,478,800	2,422,884	1,716,218	1,136,113	859,404	733,021
Mayville and Baraboo	98,057	136,632	219,381	80,583	105,765	145,010
Total	62,836,082	64,437,003	66,658,466	47,272,751	32,729,726	49,947,116

Employment Service to be Ousted

Defeat of $10,000,000 Appropriation Practically Assured in Closing Hours of Congress —*The Iron Trade Review's* Expose of Padded Figures and Bureau's Connection With Organized Labor Stirs House and Senate

WASHINGTON, March 3.—The United States employment service of the department of labor will go out of existence with the end of the fiscal year, June 30. This became assured when its supporters in the house last week failed to get an appropriation of $10,000,000 for the service in the sundry civil bill. Making the assurance more emphatic, is the fact that the senate, on the eve of the adjournment of congress, is jammed with legislation and finds itself unable to consider the measure, which has not even been reported to the upper branch. Consequently there will be no opportunity to insert the provision in the bill in the senate.

While technically the amendment to appropriate $10,000,000 was ruled out in the house on a point of order by Acting Speaker Garrett, who said the service never had been authorized by congress, its defeat was due to the sentiment in congress against the service and its methods. Ruling of Garrett's ruling was upheld by a vote of 114 to 58.

The expose by THE IRON TRADE REVIEW of padded figures of the bureau purporting to show unemployment was commented on favorably by members of congress. One prominent republican represenative, who asked not to be quoted, said the article verified reports that had come to him.

"THE IRON TRADE REVIEW has done a good service," he said, "and is on safe ground in exposing the methods of the bureau. I was opposed to its continuance partly because of those methods and partly because of the attempts of organized labor to gain its own ends and to continue many unnecessary jobs at the expense of the government and the people."

Other members spoke similarly, declaring that the service had accomplished no good that cannot be continued by the regular organization of the department of labor and that they could not see why $10,000,000 should be appropriated for a bureau conducted as the employment service has been conducted.

"I am against the bureau and am not surprised to learn of its methods of exaggerating figures which are alleged to show unemployment," said a senator from Pennsylvania. "No argument is required to convince me that the bureau should be discontinued."

Densmore Passes Blame for Errors

WASHINGTON, March 4.—John B. Densmore, director general of the United States employment service, after reading the article in THE IRON TRADE REVIEW last week analyzing and criticizing the figures purporting to show national unemployment, and particularly that in the Cleveland district, said he had no disproving comment to make. He did not say any attempt would be made to improve the accuracy of the reports on unemployment or to have a special investigation made in the Cleveland or any other district. He declared that dependence is placed upon reports of state-federal directors and that it remains for them to see that they are accurate. The Cleveland district and Ohio figures are compiled by Fred C. Croxton, federal-state director in Ohio, according to Mr. Densmore.

Officials in the employment service have virtually admitted that the figures given out are nothing more or less than guesses. While there is supposed to be a uniform system followed in gathering the figures calling for actual information through direct contact with employers in all lines of industrial activities, it is evident that the community boards do not in all cases by any means pursue this plan. Instead they merely make rough estimates, which, it is charged, are often based upon misrepresentations made by representatives of labor unions, with ulterior motives in mind.

Morever, no coherent fundamental system is pursued in compiling the figures. They are supposed to show surplus unemployment. Allowance therefore is made in some, if not most districts, for the so-called normal and seasonable unemployment, and the figures given out ostensibly are designed to show the idleness over that which prevails ordinarily. But in the Cleveland district, for instance, the figures apparently are aimed to show the total unemployment, and are greatly exaggerated even on this basis. The attempt to show surplus unemployment, that is, the degree of idleness over that which commonly prevails, is recognized, however, as being more or less futile. This is due to the fact that there is no actual way of learning what the so-called normal unemployment is, a fact conceded by officials of the employment service.

The activities of the employment service, it is charged, are controlled entirely in accordance with the demands of organized labor and because of this, together with the propaganda labor union representatives have conducted to have the service continued, members of congress have become aroused and resentful. The propaganda, by which congress was flooded with telegrams practically demanding that they support an appropriation to continue the employment service, had a great deal to do with the refusal of the house to vote such an appropriation in the sundry civil bill, where that measure originated. Not only that, but organized labor was roundly criticized in congress, perhaps more so than that generally politically pampered organization ever experienced before.

Even members of congress have grown tired of the domineering attitude of the American Federation of Labor, whose president, Samuel Gompers, was referred to last week by Representative Cannon, Illinois, as the greatest autocrat in the United States.

The telegrams sent out by the employment service last week to representatives of organized labor, chambers of commerce, and to other sources, urging that they bring their influence upon congress to support an appropriation of $10,000,000 to continue the employment service for another year, brought great numbers of messages to members of congress. For the most part they came from representatives of organized labor, who not only practically demanded that the appropriation be allowed, but in some cases implied that political defeat would result for those members refusing to vote for the appropriation.

Representative Blanton, Texas, was one member of congress who took up the challenge of organized labor. He specifically urged that the employment service be abolished and in a telegram charged that Mr. Gompers and the labor unions in general served only their own selfish interests during the war. The point had been reached, he said, when congress must decide whether America and its government is to be run in the interests of its 110,000,000 people or run solely by Samuel Gompers in the selfish interests of 3,000,000 members of labor unions.

Use Federal Funds to Retain Jobs

Mr. Blanton read the telegram, which was a message he had sent to *The San Antonio Express*, San Antonio, Tex., which had inquired about his attitude toward the employment service. The discussion came up in connection with debate on the deficiency appropriation bill, the immediate matter before the house being an amendment offered by Representative Good, Iowa, which was adopted, providing that no money appropriated in that measure shall be used for any personal services or to pay for any advertisement, telegram, letter or circular designed to defeat or enact any proposed legislation by congress or to influence any member of congress in his vote on any appropriation unless specifically authorized. Representative Good's amendment was prompted by the practice of different executive departments sending out telegrams at government expense to various organizations requesting them to wire members of congress to vote for or against certain measures, a practice that was used by the employment service in its attempt to have congress make an appropriation for its continuance. Mr. Blanton resented the cablegram sent from France by Mr. Gompers to Secretary Frank Morrison of the American Federation of Labor, which the latter gave out, telling members of congress it would be well for them "not only to uphold this public service employment amendment that is to be offered, but every other species of legislation that was within the labor program, otherwise we could expect a revolution in this country from the returned soldiers later on."

The telegram of Mr. Blanton to the Texas paper follows:

"Kindly permit me to publicly answer telegram just received from Director J. F. Carl. The sundry civil bill continues the employment service until July. This service in Texas is beneficial, worthy and ideal. It is

Gompers is Greatest Autocrat in United States, Says Cannon

IN the house on Tuesday of last week, Representative Cannon, with characteristic courage and sagacity, declared that President Samuel Gompers of the American Federation of Labor is the greatest autocrat in the United States. The remarks of "Uncle Joe" were made in connection with discussion of the bill carrying a revolving fund of $750,000,000 for the railroads. It had been stated that organized labor was petitioning congress to vote for government ownership of the railroads. Majority Leader Kitchin said he hoped the next congress would have "the courage to do the right thing and resist these numerous petitions and agitations." "Uncle Joe" was not so sure that it will have such courage, even though it supposedly will be a republican congress. The senate, he said, will be "worse than a democratic senate."

Then this colloquy followed:

Mr. KITCHIN: The gentleman ought to have as much confidence in the next congress as I have got. [Laughter and applause.]

Mr. CANNON: Now we have got what? A republican house and a worse than democratic senate. [Laughter.] There is the situation.

Mr. KITCHIN: Why, I do not know. I have understood the republicans got the senate, too.

Mr. CANNON: Nay, nay. [Laughter.] You call the roll.

Mr. KITCHIN: The gentleman must impeach some of those gentlemen over there who have been elected as republicans, then.

Mr. CANNON: Oh, I leave it to the country and to the fullness of time. Why, does the gentleman know that the senate of the United States is going to go the limit to organize the house of representatives [laughter and applause]—let me finish my remarks—aided by the chairman of the republican national committee? [Applause.]

Mr. GARNER: That is worse than Cannonism.

Mr. CANNON: Now, I want to say this: The greatest autocrat in the United States today is a man of very great ability. I am not denying that he is honest, but Samuel Gompers is the greatest autocrat in the republic, and he demands government ownership. I get the round robins of all kinds indorsed by the Federation of Labor scattered throughout the country, "We demand that you shall support government ownership of railroads."

Mr. KITCHIN: Let me tell the gentleman what we shall do in the next congress. Let you and myself join hands and try to keep the republican congress in the next congress from letting Samuel Gompers dictate to us. [Applause.]

Mr. CANNON: Well——

Mr. KITCHIN: Will you join me?

Mr. CANNON: Well, that is in the future. [Laughter.] I would rather see an ounce of accomplishment while you have been in full possession of both house and senate.

Mr. KITCHIN: You have the evidence that Sam Gompers has not made the democratic senate or the democratic house pass an act for government ownership. We have stood out against it. If the republicans of the next house are equally courageous, it will be all right; if not, I suppose some of us democrats can put courage in them.

Mr. CANNON: We will soon be in a special session, and we will wait and see.

not so in other states of the country.

"It is not the returning soldier boys who are now demanding that this service be made permanent, adding an extra $10,000,000 appropriation for the coming year; but it is the members of organized labor who did not enlist or fight, but who claimed industrial exemptions, and who during the war have drawn higher wages than ever dreamed of before, as high as $11 per day, more than the salary of the governor of Texas, while our fighting boys in the trenches were paid only $33 per month.

"When General Crowder ordered all men to work or fight, it was Samuel Gompers and this same bunch who threateningly told him that he would not apply the work or fight order to organized labor, and thus forced the drafting of boys 18 years old. When congress required the 240,000 government clerks drawing annual salaries up to $2500 to work eight hours per day during the war, it was the same bunch who forced President Wilson to vote this eight-hour provision by thousands of such employes marching to the capitol and threatening to quit work and to cripple every department of the national government in war time.

"Statistics in the labor bureau show that during war from April 6, 1917, until the armistice was signed Nov. 11, 1918, there were in the United States 6000 strikes by members of organized labor, lasting an average of 18 days duration.

"Although 44 states have ratified the prohibition amendment and it is part of our constitution, these same labor unions are arranging to strike against the constitution July 1. They also defied the law and the courts of California. Yet our newspapers are tongue-tied and silent, because absolutely dependent upon union labor."

Government is Coddling Trade Unionism

WASHINGTON, March 4.—The department of labor's weekly report purporting to show the number of men unemployed in this country and the department of commerce's efforts to create a board for suggesting prices to stabilize industry and to keep labor employed are regarded here as typical illustrations of the government's apparent vacillation in dealing with the labor problem. The freedom with which officials talk of the possibility of bolshevism spreading in the United States, and the efforts which seem to be made to intimidate manufacturers and business men as well as the nation's lawmakers to force industrial steps and appropriations to coddle the labor element are considered in many quarters to be overdone.

Some government officials evidently view present industrial conditions in a sane attitude, while others have the appearance of radical uncertainty and fear and in their actions and statements suggest the possibility of evils which all agree should not be allowed to gain headway. It is in this apparent lack of unity that much of the present criticism of the government's efforts arises. The general view is that the entire problem should be directed by the President, who should outline a national policy and force his officials to adhere to it. The governors' and mayors' conference called in session here this week will be watched with interest by industrial leaders. As E. H. Gary, chairman of the American Iron and Steel institute, said last week "the steel industry is in favor of the principle of co-operation," and that is conceded of all industry generally, but until the government "co-ordinates and co-operates" in its own measures, how, the question is asked, can industry be expected to subscribe to widely divergent views?

President Wilson, before he sailed for France in December, addressed congress and declared, in effect, that industry can best work out its own readjustment program without any undue efforts in the way of governmental aid.

Before the President made his address, B. M. Baruch, chairman of the war industries board, in a talk with newspapermen on Nov. 27, "deprecated the pessimistic apprehensions of those who foresee serious industrial dislocations and labor difficulties attendant upon the return of American business to a peace basis." He felt sure that "for a long and continued period there would be such demand for the products of American industry as would maintain prosperity and insure employment." He emphasized the point that for years "industry has been dammed up, and unlimited opportunities lie ahead."

Secretary Wilson, under whom is the employment service, just recently declared his "vision of the situation is that there will not be more than four to six months at the most of interim between the signing of the armistice and our getting into the regular, post-war swing." The four months period will be up in another week, leaving two months, according to the secretary, for the stabilization period to be here. That takes it up to May 11 when spring building operations are generally underway and when the summer construction programs are usually so far advanced as to have the requirements made known to the contractors and manufacturers who are to furnish the materials. It is in the face of this optimistic view that the employment service and Secretary Redfield have undertaken their work.

Secretary Daniels, in a recent speech in Baltimore, declared there is little danger of bolshevism getting a grip here. Other cabinet officers have taken the same attitude, yet despite this, the cry has gone out from government officers that the danger is very great and the situation very grave. However, it is the navy department's policy of delaying work in the hope of getting lower prices, a policy well known before the United States went to war, that is helping to make industry skeptical of the plan Secretary Redfield has for "suggesting prices." Even with lower levels suggested, it is believed the navy will not be satisfied when these levels are tried out under the prescribed competitive bidding system. The railroad administration's reputation on this point also is fresh in the minds of manufacturers.

Secretary Redfield has been in the front rank of those who see the bolshevik peril. It is in giving this warning that he has called upon industry to take up the price plan. The plan so far has not shown how the anti-trust laws will not be invoked against the industries participating, but has made it very plain that manufacturers will have to take the brunt of any efforts which may be made to reduce wages. On this point, Secretary Wilson warns that "labor organizations are in a better position to resist reductions in wages than they have ever been before." He fears "that if any attempt be made to force down the wages of the workers to any considerable extent there will be a resistance long enough to prevent its accomplishment."

A typical employment service "warning" against bolshevism is that made by Dr. George W. Kirchwey, federal director of employment for New York state, who said he "would not be surprised if we should witness some fine examples of soviet demonstration if this condition is allowed to continue without any organized means of combating it." The condition he referred to was that "unrest is greatly increasing and that a survey of business conditions in this state shows that employers are laying off men." After reciting figures of alleged unemployment, Dr. Kirchwey made a plea for the continuance of the federal employment service under which he holds his position.

Announce New Ocean Freight Rates

Shipping Board Compiles Complete Schedule of Tariffs, With Supplementals Affecting Iron and Steel Products, from Atlantic, Gulf and Pacific Terminals to Leading Ports of World

WASHINGTON, March 4.—Complete schedules of ocean freight rates were announced Monday by the shipping board. They include those made public Feb. 1, with supplemental tariffs, affecting iron and steel products and all other cargoes, and cover routes from the Atlantic, Gulf and Pacific ports.

The first quotation following is in each instance for tons of 2240 pounds of iron and steel and the second quotation, covering general cargo, is for either tons of 2240 pounds or 40 cubic feet, at ship's option, from north Atlantic ports to South Africa: Capetown, $20, $27; Algoa bay, $20, $60; East London, $21.20, $28.20; Port Natal, $21.80, $28.80; Delagoa bay, $22.40, $29.40; Beira, $23, $30.

In addition to the rates quoted to Beira there is at present a landing charge of 30 cents a ton. The iron and steel products on which rates are quoted include: Rails and accessories, sheets, bars, angles, plates, nails, tin plate, plain wire, barb wire, hoops, rods, bolts, nuts, horseshoes, axles, trolley poles, staples, shafting, pipe, structural and bridge material, concrete reinforcement and pig iron.

From Atlantic and Gulf ports to South America, the rates on all cargoes are:

North Brazil—Para, Maranhao, Ceara Manaos, $22.50, landed; Natal, $25, landed; $22.50, freight free alongside; Cabedello, $27, landed; $22.50, freight free alongside.

Middle Brazil—Pernambuco, $27, landed; $25, freight free alongside; Maceio, Rio de Janeiro, $26.50, landed; $25, freight free alongside; Bahia, Victoria, $27.50, landed; $25, freight free alongside; Santos, $25, landed.

South Brazil—Paranagua, $30, landed; Sao Francisco do Sul, Florianapolis, $30, landed; $28, freight free alongside; Rio Grande do Sul, $30, freight free alongside; Porto Alegre, Pelotas, $35, landed.

Uruguay, Montevideo, $25.

Argentine—Buenos Aires, $25; La Plata, $27.50; Rosario, Bahia Blanca, $30; Port Madryn, $35.

Chile—Punta Arenas, $50.

A charge for heavy lift scales is to be added for pieces and packages over 4480 pounds and customary port surtaxes also are to be added.

Rates from north Atlantic ports to India, all cargoes, are respectively for cargoes stowing under 40 feet per 100 pounds and cargoes stowing 40 feet and over, the first quotation representing the rates per 100 pounds and the second the rate per cubic feet, as follows: Karachi, Bombay, Colombo and Calcutta, $1; 60 cents. Madras, Rangoon, $1.20; 65 cents. Exceptions include cartridges, 4 cents per pound; case oil, $1 per case, and hazardous cargo.

The rate on all cargoes from Atlantic and Gulf ports to the following Red Sea ports is $40 per gross ton or 40 cubic feet, ship's option: Port Said, Hodeida, Aden.

In giving rates from north Atlantic ports to Australia and New Zealand, it is stated that rates on weight cargo apply per ton of 2240 pounds, and rates on general cargo apply per ton of 2240 pounds or 40 cubic feet, at ship's option. The freight must be prepaid. Rates named are:

Naked weight, $15; packed weight, $18; rough general cargo, $25; fine general cargo, $30.

Rates from north Atlantic ports to Russia, orient, etc., all cargo, apply per ton of 2240 pounds or 40 cubic feet, ship's option, and are, respectively, for close weight and all other cargo:

Japan—Kobe, Yokahama, $20, $25. China—Shanghai, Hongkong, $20, $25. Philippine islands—Manila, $20, $25. Straits Settlement—Singapore, $20, $25. Russia—Vladivostok, all cargo, $40. French Indo China—Saigon, $20, $25. Dutch East Indies, all cargo, $40.

From the Pacific coast to the Far East the quotations given cover all cargo and are respectively for tons of 2000 pounds or 40 cubic feet in space: Japan, $12, $14; China, $12, $14; Vladivostok, $25, $25.

New Rates to European Ports

A rate of $1 a pound is made on the following commodities from north Atlantic ports to Liverpool, London, Manchester, Hull, Avonmouth, Bristol, Cardiff, Glasgow, Leith, and Belfast: Ball bearings, boat cars, cement, copper ingots, lead billets, monel metal, iron pipe fittings, spelter, wire netting, wrenches, zinc, zinc ashes, zinc dross, zinc oxide.

A rate of $1 per 100 pounds or 50 cents per cubic foot, ship's option, from and to the same points is made on agricultural implements, agricultural tractors, auto trucks, seed drills, hay and manure forks, engines, in parts of agricultural tractors; gas engines, not part of tractors.

A rate of $1.50 per 100 pounds is made on ferrosilicon, a rate of 50 cents per cubic foot is made on scales, shaping machines, electrical instruments and typewriters, and a rate of $1 per 100 pounds or 4 per cent *ad valorem* is made on vanadium, while the following products take a rate of $20 per ton weight: Black bars, barytes, boiler tubes, bolts and nuts, wire nails, pig iron, iron or steel wire rods, silica, in sacks; staples, steel billets, cold rolled steel in boxes, steel hoops in coils, light steel rails, not over 30 feet in length, wire in coils or barrels.

The new rates on all cargo, except cotton, from north Atlantic ports to the following ports are:

Rotterdam, Antwerp, Havre and Bordeaux, $1.25 per 100 pounds or 65 cents per cubic foot, ship's option.

Marseilles, Cette, Genoa and Naples, $1.60 per 100 pounds or 85 cents per cubic foot, ship's option.

Barcelona, $1.85 per 100 pounds or 95 cents per cubic foot, ship's option.

As to rates based upon weight per measurement at ship's option, these will be applied in principle according to the commodity list for north Atlantic ports to points in the United Kingdom as presented above. Rates apply on pieces or packages weighing up to 4480 pounds each. For pieces or packages in excess of 4480 pounds each customary heavy lift scale is to be added.

Rates on all cargo, except cotton, from south Atlantic ports to the following points are made:

United Kingdom, $1.07½ per 100 pounds or 54 cents per cubic foot.

Holland—Rotterdam, $1.33 per 100 pounds or 70 cents per cubic foot.

Belgium—Antwerp, $1.33 per 100 pounds or 70 cents per cubic foot.

France—Havre and Bordeaux, $1.33 per 100 pounds or 70 cents per cubic foot; Marseilles, Cette, $1.68 per 100 pounds or 90 cents per cubic foot.

Spain—Barcelona, $1.93 per 100 pounds or $1 per cubic foot.

Italy—Genoa, Naples, $1.68 per 100 pounds or 90 cents per cubic foot.

Exceptions—Spelter and lead billets to United Kingdom; steel to United Kingdom, $20 per ton of 2240 pounds,

to Havre and Bordeaux, $28 per ton of 2240 pounds, and to Barcelona, $40 per ton of 2240 pounds.

Rates from Gulf ports to Europe, all cargoes, follow:

United Kingdom—$1.15 per 100 pounds or 58 cents per cubic foot.

Holland—Rotterdam, $1.40 per 100 pounds or 73 cents per cubic foot.

Belgium—Antwerp, $1.40 per 100 pounds or 73 cents per cubic foot.

France—Havre, Bordeaux, $1.40 per 100 pounds or 73 cents per cubic foot.

Spain—Barcelona, $2 per 100 pounds or $1.08 per cubic foot.

Italy—Genoa, Naples, $1.75 per 100 pounds or 93 cents per cubic foot.

Exceptions—Spelter and lead billets to United Kingdom ports, $1 per 100 pounds; steel to United Kingdom ports, $20 per ton of 2240 pounds, to Havre and Bordeaux, $28 per ton of 2240 pounds, to Antwerp and Rotterdam, $30 per ton of 2240 pounds, and to Barcelona, $40 per ton of 2240 pounds. The same special conditions concerning applying commodity principle and as to weight of packages and pieces are made as for shipments from north and south Atlantic ports.

Piez Rejects Hog Island Wage Demand

WASHINGTON, March 4.—In a decision made public last Thursday, Director General Charles Piez of the Emergency Fleet corporation refused the demand of foremen of the Hog Island shipyard for an increase of $1 a day in wages. Instead, Director General Piez supports the concessions offered to the foremen previously by the American International Shipbuilding Corp., agent of the Fleet corporation, granting an advance of 33⅓ cents a day or $2 a week. The decision is made in a letter addressed to Charles F. Scott, Philadelphia, and is in the form of a reply to a communication carrying the demand from P. F. Donahue on behalf of Local 331, International Brotherhood of Boilermakers, Shipbuilders and Helpers of America, which had been sent to the American International Shipbuilding Corp. and it has been accepted. The letter from Mr. Donahue sought an increase to $70 a week in wages of foremen now getting $64 and an increase to $58 for foremen now getting $52. Foremen for whom the $70 scale was asked include fitters, riveters, erectors, tank testers, clippers and caulkers and boiler installation; those asking $58 include bolters, drillers and reamers.

Wanted Overtime Over Eight Hours

The union also asked for time and a half for any period in excess of eight hours and double time for Sundays and holidays. All sick leave, it was asked, should be covered by general order permitting 2½ days absence per month without loss of pay. The latter point is allowed. But terms as to overtime do not meet those asked. The decision provides that the week shall be five days of eight hours each, with four hours on Saturday, with overtime at time and a half with double time for Sundays and legal holidays mentioned in the Macy award. It is stipulated, however, that such overtime as is usual to a foreman's duties in preparing work, or closing up work before men begin work, or after they quit, is not to be considered overtime, provided it does not exceed three hours a week. It is further stipulated that whenever the men under a foreman put in overtime, the foremen, if on duty, shall be credited with a similar amount of overtime, and that all work on Sundays or legal holidays shall be considered overtime. It is pointed out that payment on the weekly basis compensates the men for seven holidays, while the sick have allowance even though but 1½ days a month is used, represents compensation for 18 days a year, the combined advantage representing more than $5 a week over hour wages computed by the same hourly rate.

The demand for an increase at Hog Island was based on the statement that similar or higher wages are being paid at the Bristol, Pusey & Jones and Harlan & Hollingsworth plants and that in addition to directing and supervising the work of men under him, the foreman of any craft at Hog Island, by reason of the inexperience of many called for additional training.

Director Piez said he found that while most yards use the title of foremen, the duties are rarely alike, and the positions are not comparable. He eliminated the Bristol yard from consideration, because, while it is a government agency yard, the rates for some reason unknown to Mr. Piez, have been raised to what he says appears like a wholly unwarranted figure. In the Pusey & Jones yards the foremen who get $70 a week have charge of four ways, and are in effect superintendents; in the Harlan & Hollingsworth yard the foremen who receive $70 a week or more number but one for each craft, and their duties are those of superintendents.

In his decision, Mr. Piez says:

"The shipbuilding industry, in spite of the cancellations made, still presents opportunity under government contracts alone for many months of continuous work, and is in this respect in vastly better shape than any other of our leading industries. But if the industry is to be perpetuated in its present vigor, it must purge itself of those who are incompetent or physically unfit for the rigors of the work. It is only by manning the yards with men of skill and experience that our costs can be lowered to a competitive an ultimate reduction in the wage scale.

"Certainly with unemployment growing, with prices generally on the decline, and with lessening opportunities in many of the industries, demands for increases in wages, even in a government undertaking, can be justified solely on the ground of a considerable increase in the average production of the individual. You have co-operated with us so closely and fairly for the good of the industry, and the members of your craft are so vitally interested in a continuance of its prosperity that I ask your aid in getting the industry back on a productive and competitive basis."

Ship Cancellations at End

In connection with the future of the shipping program, Chairman Hurley of the shipping board states that cancellations of contracts have reached the limit. He says: "We have taken advice of the best shipping experts in the country as to modification or revision of our program. As a result of this careful study and an endeavor on our part to do the thing which is financially best for the country, we have reached what we believe, in the exercise of our judgment, is the limit of cancellations on a large scale." He said that prior to Jan. 1, 1919, contracts for 107 ships, including 55 steel, 32 wood and 20 concrete had been suspended or canceled. On a rough estimate, up to Feb. 15, 1919, cancellations or suspensions had applied to about 550 or more vessels, of 2,700,000 deadweight tons capacity most of which were steel cargo ships. The total aggregate contract prices of these vessels were about $400,000,000.

Chairman Hurley says that according to his best advices the world is 9,750,000 deadweight tons short of the supply of 1914. About 10,000,000 deadweight tons are under construction in this country and about 5,000,000 tons abroad. "The surplus to be expected in 1921, therefore, over the world's 1914 tonnage hardly seems to allow for more than what may be a normal expansion of overseas trade and a growth in our own foreign business," he says.

Men of Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

CHARLES PIEZ, director general of the Emergency Fleet corporation, will resign this position effective May 1 to return to Chicago to resume the presidency of the Link-Belt Co. Howard Coonley, vice president, will leave the Fleet corporation late in April and go to Boston, where he is president of the Walworth Mfg. Co. Mr. Piez said that he decided several months ago that he wanted to return to his private interests and that the war crisis having passed, he will act on that decision, but, at the request of Mr. Hurley he is remaining until he acquaints his successor with the work.

E. L. Parker, president of the Columbia Steel & Shafting Co., Pittsburgh, has gone to Atlantic City for convalescence from a recent operation for appendicitis.

Albert Mitchell, foreman for the Linderman Machine & Steel Co., Muskegon, Mich., resigned recently to become superintendent at the plant of the M. Rumeley Co., Battle Creek, Mich.

C. F. Hepburn has been appointed director of sales for the Torbensen Axle Co., Cleveland. Mr. Hepburn has been serving in the ordnance department for a year and one-half, with the rank of major.

Charles L. Jarvis, president and treasurer of the Charles L. Jarvis Co., Gildersleeve, Conn., maker of a tapping device, will retire from the active management of the business, March 1. His son, Marshall N. Jarvis, will succeed him.

Richard Kiel, vice president of the Koehring Machine Co., Milwaukee, Wis., manufacturing concrete mixers, gas engines and other machinery, has resigned as vice president of the East Side bank of Milwaukee to devote his entire attention to the Koehring interests.

Ensign T. D. Britton, who recently was discharged from duty at the United States steam engineering school at Hoboken, N. J., has become affiliated with the sales organization of the Cleveland Duplex Machinery Co., Bradley building, Cleveland. Before enlisting in the navy department's service, Mr. Britton was a student at Case School of Applied Science, Cleveland.

D. Weeks, who was in the machine tool business in New York City for a number of years, is now a member of the sales force of the Heald Machine Co., Worcester, Mass., selling magnetic chucks, exclusively. He formerly was with the Dale Brewster Co.

CHARLES PIEZ

J. F. Cafferty now is connected with the New York branch of the Heald Machine Co., Worcester, Mass. He formerly was with the F. E. Read Co., Worcester, and subsequently was employed by the Morgan Motor Truck Co., and was recently with the Dale Brewster Co., New York City.

A. J. Schamehorn of Highland, N. Y., has been visiting the plant of the Heald Machine Co., Worcester, Mass., preparatory to taking over the New York territory, formerly handled by Mr. Creiner. Mr. Schamehorn was graduated from the University of Michigan in 1911 and was then employed by the Hyatt Roller Bearing Co., in the capacity of sales engineer.

C. C. Farmer, assistant western manager and resident engineer at Chicago for the Westinghouse Air Brake Co., has been made director of engineering for that company. He has been succeeded as resident engineer by John S. Y. Fralich, who has been with the Westinghouse company since 1904, serving as assistant engineer since December, 1913.

C. V. Nordberg, president of the Nordberg Machine Co., Butte, Mont., has purchased George Hepworth's half interest in the Missoula Iron Works, Missoula, Mont. Mr. Nordberg becomes the partner of Charles C. Moxley, who for the past four years has been affiliated with Mr. Hepworth in the operation of the iron works. The latter is in ill health and now is in Rochester, Minn., for treatment.

Tom Wright, manager of industrial relations for the American Multigraph Co., Cleveland, has originated a design for indicating on service flags the number of soldiers who have come back to be reinstated in their respective jobs. The emblem consists of circling each blue star of the service flag with red and it has been adopted by the National Association of Employment Managers.

Norval A. Hawkins, sales director of the Ford Motor Co., Detroit, for the last 11 years, has resigned to engage in private business interests. In 1904, as a public accountant Mr. Hawkins was engaged to systematize the plant and office accounting methods and later became auditor for the company. In 1907 the company marketed 6181 cars and in 1917 815,912 cars. There had never been a time in the 11 years Mr. Hawkins served as sales manager that the cars were not sold long in advance of production.

Cyrus H. McCormick, who has been president of the International Harvester Co., Chicago, since its organization in 1902, retired on Dec. 26 to become chairman of the board of directors. His brother, Harold F. McCormick, treasurer from 1906 to 1912 succeeds him as president. It is stated that this retirement would have taken place sooner but for the government's suit against the company which recently was terminated. Cyrus H. McCormick was president of the McCormick Co., the predecessor of the International Harvester Co., for 18 years. He thus rounds out 34 years of continuous service.

Men of Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

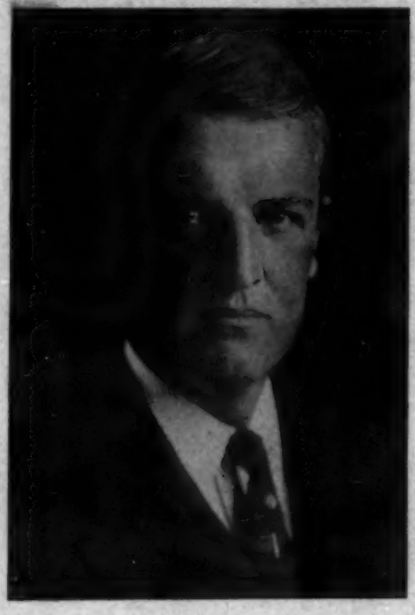
A. S. BLAGDEN, who in the fall of 1918 resigned as president of the American Malleables Co., Lancaster, N. Y., and Owosso, Mich., to become vice president and general manager of the Air Reduction Co. Inc., 120 Broadway, N. Y., was elected president at the meeting of the board of directors, held Feb. 19. Early in 1917, Mr. Blagden succeeded W. G. Pearce as president of the American Malleables Co., Mr. Pearce becoming chairman of the board. When he resigned to remove to New York, Authur Aigeltinger was made president. Other officers of the Air Reduction Co., Inc., elected at the meeting of the board of directors, were as follows: Vice president, A. R. Ludlow; treasurer, C. E. Adams; secretary, M. W. Randall; assistant treasurer, C. L. Snow and assistant secretary, C. C. Emerson.

Thomas E. Monks, president of the Cleveland National bank, Cleveland, has been elected president of the Carroll Foundry & Machinery Co., Bucyrus, O., manufacturer of locomotive cranes, which was recently purchased by a syndicate of Cleveland men. Other officers elected are: W. E. Matthew, vice president; Sheldon A. Cary, secretary-treasurer; F. R. Ambrose, assistant secretary; Robert S. Carroll, assistant treasurer.

William J. Longbon, who has been manager of the Columbus, O., branch of the Moline Plow Co., East Moline, Ill., has become trade manager of the Moline tractor and tractor-drawn implement department. He will have charge of all the territory east of the Mississippi river and will make Columbus his headquarters for a time at least. N. K. Hemingway, who has been assistant manager at the Columbus branch, has been promoted to manager.

Charles S. Amidon of the J. N. Lapointe Co., New London, Conn., manufacturer of broaching machines, has been elected secretary of the New London Manufacturers' association recently organized in New London, Conn., to promote greater cooperation among the community's manufacturers. On the committee's executive committee are the following: Ralph H. Melcer, Palmer Bros. Co.; Carlos C. Peck of the Standard Brass & Copper Tube Co.; Henry R. Bond, of the New London Ship & Engine Co., and N. Cutler of the Atwood Machine Co., Stonington, Conn.

St. E. Osmar, president and general manager of the Aktiebolaget, Galco, Stockholm, Sweden, the largest dealer in machine tools in Scandinavia, is



A. S. BLAGDEN

on an automobile tour of the industrial centers of the United States with a view to obtaining high-class agencies from American machine tool builders. He visited the industry in Worcester, Mass., recently. He predicts big business is in sight for the United States, especially in the machine tool line.

W. E. Perrine, assistant general manager and production director of the Standard Parts Co., Cleveland, will on March 1, become affiliated with the General Motors Corp. He will be in the executive and production department of the Chevrolet division with headquarters in New York. He will be chief assistant to President W. C. Durant. Mr. Perrine at one time was production manager of the F. B. Stearns Co., and later when the Standard Parts Co. was organized he entered the service of that company.

Henry D. Sharpe, president of the Brown & Sharpe Mfg. Co., Providence, R. I., is a member of the executive committee in charge of the erection of a new memorial auditorium in that city. He also has been elected a director of the Rhode Island Mutual, State Mutual, Manufacturers' Mutual, Mechanics' Mutual, American Mutual and the Enterprise Mutual Fire Insurance companies, all of Providence, as well as a member of the executive committee of the Eastern States Agricultural and Industrial league, Springfield, Mass.

W. F. Reading was recently appointed manager of the St. Louis branch office of the Oliver Machinery Co., Grand Rapids, Mich. He will have entire charge of the sales for the southwestern section of the United States. J. R. Bate and L. H. Bazuin have recently been added to the sales force of the company. The former will travel in Indiana and Kentucky and the latter in Michigan. J. R. Duthie has just received his honorable discharge from the United States service and is again traveling in the Pittsburgh district for the Oliver company.

Robert H. Schultz was elected president and treasurer of the Smyth Mfg. Co., Hartford, Conn., Jan. 27, to succeed the late John C. Wilson. He had been vice president and secretary of the company. Other officers elected at the annual meeting were: Vice president and secretary, Charles P. Cooley; directors, William C. Skinner, Atwood Collins, George A. Kimball, Robert H. Schutz, Harry S. Conklin, Charles P. Cooley and Philip B. Gale. The latter takes Mr. Wilson's place on the board. Mr. Schutz has been with the Smyth Mfg. Co. since 1894. He also is president of the Sigourney Tool Co., Hartford, and a director of the Standard Screw Co., of which the Hartford Machine Screw Co. is a division.

William G. Coxe, formerly president of the Harland & Hollingsworth Corp., Wilmington, Del., and later director of privately-owned shipyards along the Delaware river for the Emergency Fleet corporation, has become associated with the Pusey & Jones Co.'s shipyards in Wilmington and Gloucester City, Del. It is understood that these yards have taken or will take new contracts from the government.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

HARRY T. GILBERT, who for several years has been sales manager of the Sharon Steel Hoop Co., Sharon, Pa., at Chicago, has been named as executive vice president of the company and will return to Sharon shortly to assume his new duties. Mr. Gilbert has been connected with the company for about 12 years and has been a director for several years past. Severn P. Ker, remains as president of the company, but will be relieved of a great many of his duties by Mr. Gilbert. Another change in the personnel of the company is the appointment of W. B. Caldwell as assistant to George W. Short, vice president in charge of operations. Mr. Caldwell has just left military service, having been an ensign in the naval aviation corps and prior to his enlistment was connected with the Sharon plant of the National Malleable Castings Co.

Charles H. Foster has been elected vice president and treasurer of the Superior Steel Corp., Carnegie, Pa.

Leslie W. Millar, who has been employed by the navy department at the Bethlehem shipyards, Quincy, Mass., has been made special railroad representative of the Mark Mfg. Co., Chicago.

Malcolm L. Maclean, formerly with the American Steel Foundries, Chicago, and until recently a major in the infantry, has become attached to the Duquesne Steel Foundry Co., Pittsburgh, as manager of sales.

John William Brophy, who has been connected with the Newcastle Steel Works, New South Wales, Australia, has been appointed general manager of the State Iron Works, Queensland, Australia.

H. E. Brubaker who has been general superintendent of the Ohio Seamless Tube Co., Shelby, O., and who is a director of the company, has been granted a six months' leave of absence. His place is being filled by R. R. Johnston, his assistant.

Robert A. McDonald, formerly superintendent of the Crescent works of the Crucible Steel Co., Pittsburgh, has been made general superintendent of the Pittsburgh Crucible Steel Co., Midland, Pa., succeeding John W. Dougherty, who becomes superintendent of construction in which capacity he will have charge of coke oven and blast furnace construction which the company has under way.

Andrew Barr, of Batavia, Ill., has become superintendent of the foundry of the Waterloo Gasoline Engine Company, Waterloo, Ia. Mr. Barr has been associated with the United States Wind Engine and Pump Co. of Batavia since 1894.

R. A. Bull, vice president of the Duquesne Steel Foundry Co., Pittsburgh, who served as major of ordnance during American participation in the world war, has received an honorable discharge from the service and has resumed his former duties with the company.

Lieut. John M. King has received an honorable discharge from the 133d field artillery with which he spent six months in France and has resumed his position in the Pittsburgh sales office of the Jones & Laughlin Co. Lieutenant King is the son of Willis L. King, vice president of the Jones & Laughlin company.

A. W. Preikschat, formerly assistant to the engineer of tests of the Pullman Co., and more recently special representative in the purchasing department of the Steel & Tube Co. of America, has been made sales representative of the Liberty Steel Products Co., Inc., with offices in the McCormick building, Chicago.

Louis Gloe, Two Rivers, Wis., has been elected secretary of the Leyse Aluminum Co., Kewaunee, Wis., which is enlarging its facilities and business. Mr. Gloe was connected with plant No. 4 of the Aluminum Goods Mfg. Co., Manitowoc, Wis., for many years. The Leyse company formerly was known as the Aluminum Sign Co.

Robert J. Anderson has resigned his position as research metallurgist with the bureau of aircraft production, Detroit, to join the staff of the bureau of mines, experiment station, Pittsburgh, for the purpose of making special investigations in the metallurgy of aluminum and other nonferrous metals. The bureau of mines has organized a section to investigate the nonferrous foundry industry with special reference to melting practice. Mr. Anderson will pay special attention to this work. Prior to his connection with the bureau of aircraft production during the war, he was metallurgist for the Cleveland Metal Products Co., Cleveland, and previous to that time was a member of the staff of THE IRON TRADE REVIEW.

W. B. Huntley, who has been a lieutenant in the ordnance department of the army, stationed at Washington, having to do with shell steel supply, has been discharged. He now is affiliated with the sales organization of the United Alloy Steel Corp, Canton, O. Before his enlistment he was connected with the Crucible Steel Co. of America.

F. O. Blackwell, president of Viele, Blackwell & Buck, New York, exporters, importers, engineers and contractors, has sailed for Europe to investigate electrical and hydroelectric engineering possibilities in France, Spain and Italy. He is accompanied by one of the company's engineers who has lived for more than 10 years in Paris and who will study the feasibility of opening up a Paris branch for the company.

H. R. Kiroack has resigned his position as president of the Hudson Sheet & Tin Plate Co. of New York and Marietta, O., to resume his duties as secretary, treasurer and general manager of the New York office of Sophus Berendsen, Inc. The latter concern is placing a large volume of business in iron, steel and metal products for shipment to Scandinavian countries for use in shipbuilding and railroad construction.

Arthur G. Brown, who for many years was identified with the sheet and tin plate department of the United States Steel Products Co., San Francisco, handling the output of the American Sheet & Tin Plate Co., has become associated with the A. C. Rulofson Co., with headquarters in the Monadnock building, San Francisco, which represents the Brier Hill Steel Co., Youngstown, O. A. C. Rulofson, of the A. C. Rulofson Co., who for a long period of years has been identified with the iron and steel industries of the Pacific coast, is leaving for an extended trip to New Zealand and Australia for the benefit of his health.

:: Here and There in Industry ::

INCORPORATED under the laws of the state of New York, the Harder Furnace & Engineering Corp., 165 Broadway, New York city, has been organized with a capitalization of $300,000. Of that $100,000 is preferred and $200,000 common, fully paid and nonassessable. None of the stock is offered for sale. The corporation is the owner of patents secured in this and in foreign countries by W. L. Harder, for the purpose of burning oil, producer gas and powdered coal under boilers effectively. This system provides for control of temperatures. Tests over a period of 18 months in several demonstrating plants have resulted in the decision to market the combustion system. Several installations are about to be made. Officers of the corporation follow: President, unappointed; vice president, James T. Hill; secretary and treasurer, John F. Meader; chief engineer, William L. Harder, and general counsel, George V. S. Williams.

* * *

THE Kaukauna Machine Co., Kaukauna, Wis., which recently filled an order for a customer in Japan for nine of its Mayer power hammers, has received a second order from the same concern for six hammers in other capacities, ranging up to 250 pounds.

* * *

THE Southern Metal Culvert Co., Salisbury, N. C., is located in the building formerly occupied by the Salisbury Metal Culvert Co. It will manufacture corrugated metal culverts. The names of the officers are: President, Wm. Phifer Quinn; vice president, M. C. Quinn, and secretary and treasurer, Clifton Quinn.

* * *

THE Worden-Allen Co., Milwaukee, has taken the contract to build a new compressor house, 35 x 120 feet, for the Milwaukee plant of the Prest-O-Lite Co., at 619 Trowbridge street. The original building was wrecked by an explosion several months ago, causing a loss of $50,000. D. J. Brown is local branch manager.

* * *

THE Whitmore Machine & Foundry Co., Menasha, Wis., which was recently incorporated by L. W. Whitmore, B. Plowright, L. L. Whitmore and D. C. Whitmore, succeeds the Sailer-Whitmore Machine Co. and will manufacture wire weaving looms and paper mill machinery. A gray iron foundry will be operated.. At present no additional equipment is needed.

* * *

THE Keystone Machinery Co., Pittsburgh, which will be capitalized for $250,000, has applied for a charter under the laws of Delaware. The incorporators are: H. Tuch, president; Henry Hirsch, of the Contractors Machinery & Supply Co., vice president; Charles Levine, of the Hausman & Wimmer Co., secretary and treasurer.

* * *

ADDITIONAL equipment has been installed in another machine shop of the Newman Mfg. Co., Cincinnati, on the fourth floor of its building, 719 Sycamore street. This is for the purpose of manufacturing tail stock and tool post turret attachments for lathes to make available at all times nine different tools, as well as a multiple drill press head.

* * *

THE Hession Tiller & Tractor Corp., Buffalo, announces that contracts have been closed with the Well Tool & Iron Works, Ltd., Calgary, Alberta, and the Veteran Mechanical Farming Co., Ltd., Toronto, Ont. The former will distribute the corporation's tractors in southern Alberta and the latter in the Weyburn land district of southern Saskatchwan, Canada.

* * *

THREE big plants of the Aetna Chemical Co., in Oakdale, Mt. Union and Emporium, Pa., are to be dismantled and the machinery sold. A Pittsburgh scrap iron dealer has purchased the three plants. The Oakdale plant was the scene of an explosion and fire last May. The Heidelberg, Pa., plant of the company is being remodeled for use as an oil refinery.

* * *

THE first unit of a new plant for the Mahoning Foundry Co., Youngstown, O., will be ready for occupation shortly. This building is 100 x 120 feet and another building, not quite finished, is 140 x 200 feet. Both structures are of steel fireproof construction and are modern in every way. The company will continued to operate its present plant when the new one is completed.

* * *

COMPLETE Baily electric furnace equipment for melting brass is under construction at the plant of the Electric Furnace Co., Alliance, O., for shipment to Mexico. The furnaces are of the tilting type and rated 105 kilowatt electrical capacity and 1500 pounds hearth capacity, with a melting rate of 600 pounds per hour. The equipment has been purchased by G. Amsinck & Co., New York.

* * *

E. P. BULLARD JR., president of the Bullard Machine Tool Co., Bridgeport, Conn., which has been operating on a war basis several years, says that the plant now is running on standard products and has orders that will keep it going at capacity until the latter part of next summer. He states that this work does not include an order for 500 155-millimeter French guns for the United States government.

* * *

AT the annual meeting of the Federal Bridge & Structural Co., Waukesha, Wis., held Feb. 18, the following officers were elected: President, C. J. McIntosh; vice president, M. A. Jacobson; secretary, G. W. Helmer; treasurer, R. E. Huppert, and contracting manager, C. E. Slawson. These, with the exception of G. W. Helmer, serve as the board of directors with W. E. Black, S. B. Mills and J. K. Lowry.

* * *

NEW building plans of B. F. Avery & Sons, Louisville, Ky., include one 3-story brick and concrete warehouse, 100 x 200 feet and a 1-story material warehouse, 150 x 175 feet. Erection will commence about March 1, and present factory buildings are to be enlarged later. An assembling building will be erected in the near future and possibly an additional warehouse. The patterns, equipment and special machinery of the Champion division, recently purchased in Springfield, O., are to be removed as soon as the buildings are completed. Requirements in new equipment, machine tools, foundry equipment, transmission and electrical machinery will be developed about July 1, 1919.

May Upset Steel Freights

Proposal of Railroad Administration to Base Rates on Distance Rather Than Commodity Would Have Sweeping Effect

A TENTATIVE scale of class rates for trunk territory, has been distributed to the public by the United States railroad administration, through the eastern freight traffic committee and the various district traffic committees in trunk line territory. The rates are based on distances, and, if published by carriers, would mean a revision of practically all class rates in the so-called trunk line territory, which is the territory east of the Buffalo-Pittsburgh line, and north of the Potomac river. It will be noted from the accompanying scale that each class bears a certain fixed relationship to each other class, and that the rates advance in blocks of five miles up to 90 miles inclusive, in blocks of 10 miles up to 270 miles inclusive, in blocks of 15 miles up to 450 miles inclusive, and above that, in blocks of 25 miles.

While a severe penalty attaches to the first four classes under the new scale, the greatest penalty would fall upon the short haul territory; this is due to the fact that the minimum class scale, as prescribed by the United States railroad administration, starting at 25c, first-class, and ending at 7c for sixth class, has been used as a basis upon which to build up the tentative scale submitted, whereas, in the past, the minimum class rates have been substantially less than the minimum now prescribed.

May Confuse Iron and Steel

One of the most disturbing features in connection with this scale is the strong probability of an effort by carriers, if it is adopted, to cancel commodity rates on iron and steel products and place them on a classification basis. This, it is claimed by steel interests, would mean wide disturbances of relationships between competing territories, and, in addition to resulting advances, it would impose much uncertainty and confusion. Carriers have, in the past, given close attention to the proper alignment of commodity rates between various competing territories, regardless of the actual miles involved in the haul. This basic principle observed in the construction of commodity rates, which would be largely lost sight of in the application of an inflexible mileage scale.

The present status of the tentative scale is not known. The administration at Washington has recently sent out some revised instructions, which will guide the various freight traffic committees in the handling of any proposed revisions of a general nature, but it is the opinion of many of the shippers in eastern territory that an effort will be made at an early date to get the views of the public in regard to the proposed scale. A test of what it will do not only to class rates but to the iron and steel rates in eastern territory, if the classification basis of fourth class less carloads fifth class carloads, is applied, is awaited with much interest by receivers and shippers in the territory in question.

PROPOSED TRUNK LINE MILEAGE SCALE

Tentative scale of class rates for trunk line territory as distributed to public by United States railroad administration through the district freight traffic committees in trunk lines territory.

	100 Pct.	85 Pct.	67 Pct.	50 Pct.	35 Pct.	28 Pct.
Miles	1	2	3	4	5	6
5.....	25	21½	17	12½	9	7
10.....	27	23	18	13½	9½	7½
15.....	29	24½	19½	14½	10	8
20.....	31	26½	21	15½	11	8½
25.....	33	28	22	16½	11½	9
30.....	35	30	23½	17½	12½	10
35.....	36	30½	24	18	12½	10
40.....	37	31½	25	18½	13	10½
45.....	38	32½	25½	19	13½	10½
50.....	39	33	26	19½	13½	11
55.....	40	34	27	20	14	11
60.....	41	35	27½	20½	14½	11½
65.....	42	35½	28	21	14½	12
70.....	43	36½	29	21½	15	12
75.....	44	37½	29½	22	15½	12½
80.....	45	38½	30	22½	16	12½
85.....	46	39	31	23	16	13
90.....	47	40	31½	23½	16½	13
100.....	48	41	32	24	17	13½
110.....	49	41½	33	24½	17	13½
120.....	50	42½	33½	25	17½	14
130.....	51	43½	34	25½	18	14½
140.....	52	44	35	26	18	14½
150.....	53	45	35½	26½	18½	15
160.....	54	46	36	27	19	15
170.....	55	47	37	27½	19½	15½
180.....	56	47½	37½	28	19½	15½
190.....	57	48½	38	28½	20	16
200.....	58	49½	39	29	20½	16
210.....	59	50	39½	29½	20½	16½
220.....	60	51	40	30	21	17
230.....	61	52	41	30½	21½	17
240.....	62	52½	41½	31	21½	17½
250.....	63	53½	42	31½	22	17½
260.....	64	54½	43	32	22½	18
270.....	65	55½	43½	32½	23	18
285.....	66	56	44	33	23	18½
300.....	67	57	45	33½	23½	19
315.....	68	58	45½	34	24	19
330.....	69	58½	46	34½	24	19½
345.....	70	59½	47	35	24½	19½
360.....	71	60½	47½	35½	25	20
375.....	72	61	48	36	25	20
390.....	73	62	49	36½	25½	20½
405.....	74	63	49½	37	26	20½
420.....	75	64	50½	37½	26½	21
435.....	76	64½	51	38	26½	21½
450.....	77	65½	51½	38½	27	21½
475.....	78½	66½	52½	39½	27½	22
500.....	80	68	53½	40	28	22½
525.....	81½	69½	54½	41	28½	23
550.....	83	70½	55½	41½	29	23
575.....	84½	72	56½	42½	29½	23½
625.....	87½	74½	58½	44	30½	24½
650.....	89	75½	59½	44½	31	25
600.....	86	73	57½	43	30	24
675.....	90½	77	60½	45½	31½	25½

Meachem Gear Corp. Begins Manufacture of Gears

The Meachem Gear Corp., Syracuse, N. Y., has been incorporated for the purpose of taking over from the New Process Gear Corp. the manufacture of New Process gear pinions and for the general manufacture of gears of all kinds. The company is incorporated for $300,000 and has purchased a three-story building at 411-415 Canal street, Syracuse, N. Y., which is to be devoted entirely to the manufacture of gears.

The officers of the company are T. G. Meachem, president; T. W. Meachem, vice president; G. W. Wood, secretary, and J. F. S. Meachem, treasurer.

The Meachems organizing this company are the same who owned and controlled the New Process Gear Corp. and the New Process Raw Hide Co. for a period of 30 years, and associated with them are George W. Wood, secretary and superintendent, and H. W. Kiddle, assistant superintendent, who had charge of the manufacture of rawhide and the rawhide pinion department of the old company. The plant purchased is now being remodeled and began operations on March 1. When it took over the rawhide pinion business, the hide plant at 811 Free street, Syracuse, and all of the raw materials and uncompleted orders pertaining to this branch of the business.

Gary Dènies Report

Chairman E. H. Gary, of the United States Steel Corp., officially has denied that there is any truth in the rumor that William G. McAdoo, former secretary of the treasury, has been offered the presidency of the United States Steel Corp. The rumor alluded to was to the effect that Mr. McAdoo, who just has been offered the office of the president of the United States Shipping Co., also had received the tender of the presidency of the United States Steel Corp. "at an annual salary of remarkable proportions that would probably figure as the largest ever paid any corporation official in this or any other country."

Extend Time Limit on Tax Returns

Forms for Filing Tentative Statements Provided for Individuals as Well as Corporations—Part Payment of Estimated Total Due Government Will Permit Careful Computation—Litigation Foreseen

INCOME TAX DEPARTMENT
Conducted by
WOLFF, MILLER & CO.,
Certified Public Accountants
1328 Broadway, New York City

NUMEROUS requests that the commissioner of internal revenue grant extensions of time for filing returns evidently have been successful. The fact that corporations will be permitted to file tentative returns if they pay one-fourth of the estimated tax has already been commented upon in this column. Further advice is to the effect that individuals likewise will be permitted to file such tentative returns. Special forms have already been issued and can be obtained by application to the various internal revenue offices.

The tentative return simply provides for the amount of the estimated tax and the sum of the remittance enclosed with it. It will therefore be an easy matter to calculate the tax roughly, remembering that the deficiency or excess will be adjusted when the extended time is up. Returns of partnerships which are required to be filed on the calendar year basis will not be required until May 15, 1919. However, this provision does not automatically extend the time for the filing by individual partners until that date. The information blanks 1096 and 1099, on which are reported payments of $1000 or over during the calendar year of 1918, need not be filed until May 15. According to treasury decision No. 3167, partnerships and corporations having a fiscal year ending in 1918 which have secured extensions of time already expired, are granted further extensions until March 15, 1919. This is probably due to the fact that the forms for reporting them will not be available much before that time.

On the day when President Wilson signed the income tax law, the *New York Sun* ran an editorial, in part as follows:

"The bill as printed makes about 250 pages of closely set matter. It is crowded with details, some good, some indifferent, some absolutely mischievous and wicked. It would take about 10 hours to read the text through with moderate attention and care. In about 10 days' study, giving five or six hours a day, an expert lawyer or financier might fully master its provisions, their impingement, their operation, their advantages and the objections to them. Even then, all uncertainties would not be solved. Many, no doubt, will consume the time of the courts for months to come."

The *New York Times* commenting on the law said:

"The President signed the war tax bill Monday night. It is not to be believed that he read its 362 pages, not to mention the treasury's 164 pages of interpretation of a small and comparatively simple portion, that relating to individual incomes. Installments of treasury interpretations are to follow from time to time, some appearing after payments have been made, and some to correct others.

"In matters of dispute and misunderstanding the better way is to consult either the treasury officials or lawyers and accountants. The man in the street will only by accident reach a right conclusion by the unaided light of reason applied to the law itself. It is a blessing in disguise that compliance with the law will teach millions more than they otherwise would know about their own affairs. The federal trade commission has reported that less than half the corporations doing a business of $5000 and over make any allowance for depreciation. Nine-tenths do not keep cost accounts, and therefore are surprised by business failure when it overtakes them. Ignorance of costs is the commonest cause of cut-throat competition. The law is the best stimulus for the improvement of account keeping, for it leads to a strictness of scrutiny of items and balances which otherwise would never be practiced. A surtax is the greatest possible educator in the discovery of deductible costs. The wrangle may worry the treasury, but it will do the taxpayers good after they have paid their taxes."

Questions and Answers

QUESTION: We have read with a considerable interest, your articles in THE IRON TRADE REVIEW *income tax department; most especially the eighth paragraph in the Jan. 16 issue. We present the following situation:*

We had been selling our entire output through a sales agency, in which our financial interest was small. The head of this agency died suddenly in August, 1914. In order to protect ourselves, we were obliged to take over the agency. This we did, at the same time taking in another sales manager, each taking a half interest in the business, the only asset of which was good will. We financed the agency until they were on their feet, all loans being paid back eventually out of the profits.

We carry the accounts of one class of the trade, paying the agency the commissions. They carry the accounts of another branch, but are unable to turn the goods into cash before their acocunts with us fall due. A complication arises in that the agency carries a stock of merchandise of some side lines they have added, so that on paper the business would not appear absolutely a brokerage business.

The invested capital, consisting entirely of accrued profits, still remains nominal when compared to the profits of 1917 and 1918. We were not in any way connected with the manufacture or sale of supplies to the government. The profits have been rather the result of efficient selling than of invested capital. We shall appreciate your opinion of the case.

ANSWER: It would appear to us that on the basis of the facts which you give us your company should be classified as a personal service corporation.

QUESTION: This corporation, organized in 1901, is engaged in contract

diamond drilling for the purpose of locating ore bodies, being paid a certain price per foot for holes drilled. We also occasionally take options and leases on iron lands and explore them on our own account, which our articles of incorporation give us permission to do if we so desire.

On Jan. 7, 1915, we took an option for lease on a certain piece of land, spent $5000 for exploring same, developed a large body of ore, and on Nov. 1, 1915, secured a lease on same and assigned said lease to one of the large mine operating companies, receiving from them $5000 in cash, the actual amount we spent in exploration, also a contract calling for the payment by them to us of 10 cents per ton, payable as the ore is mined or shipped, as well as paying the owner of the land the royalty required as worked out in the original lease.

Our interest in this property represents no cash investment, although we received about $10,000 from it in 1917 and about the same amount in 1918. What depletion would we be allowed under the new corporation tax law? It is impossible to determine accurately the tonnage but an estimate of more or less accuracy can be made.

ANSWER: Your question indicates that you did not have title to the property nor that you have an investment in it. It does not appear, therefore, that you would be entitled to charge off depletion.

Better Demand

Shown in Refractories as Repair Work Becomes More Active

Pittsburgh, March 4.—Demand for fire brick is better than it has been before in several weeks and the trade is beginning to take a more hopeful view of the situation. One Pittsburgh district steel manufacturer is in the market for 1,000,000 bricks, needed in connection with new oven and blast furnace construction. This work temporarily is being held up pending an adjustment of the steel company's claims against the government on war contracts which were canceled, but the brick order is expected to be placed before construction work actively is resumed. Since a number of small orders are coming to manufacturers from widely scattered sources the belief is gaining ground that the surplus supplies of brick in the hands of steel and iron interests are beginning to be exhausted. Similar conditions are reported from other districts.

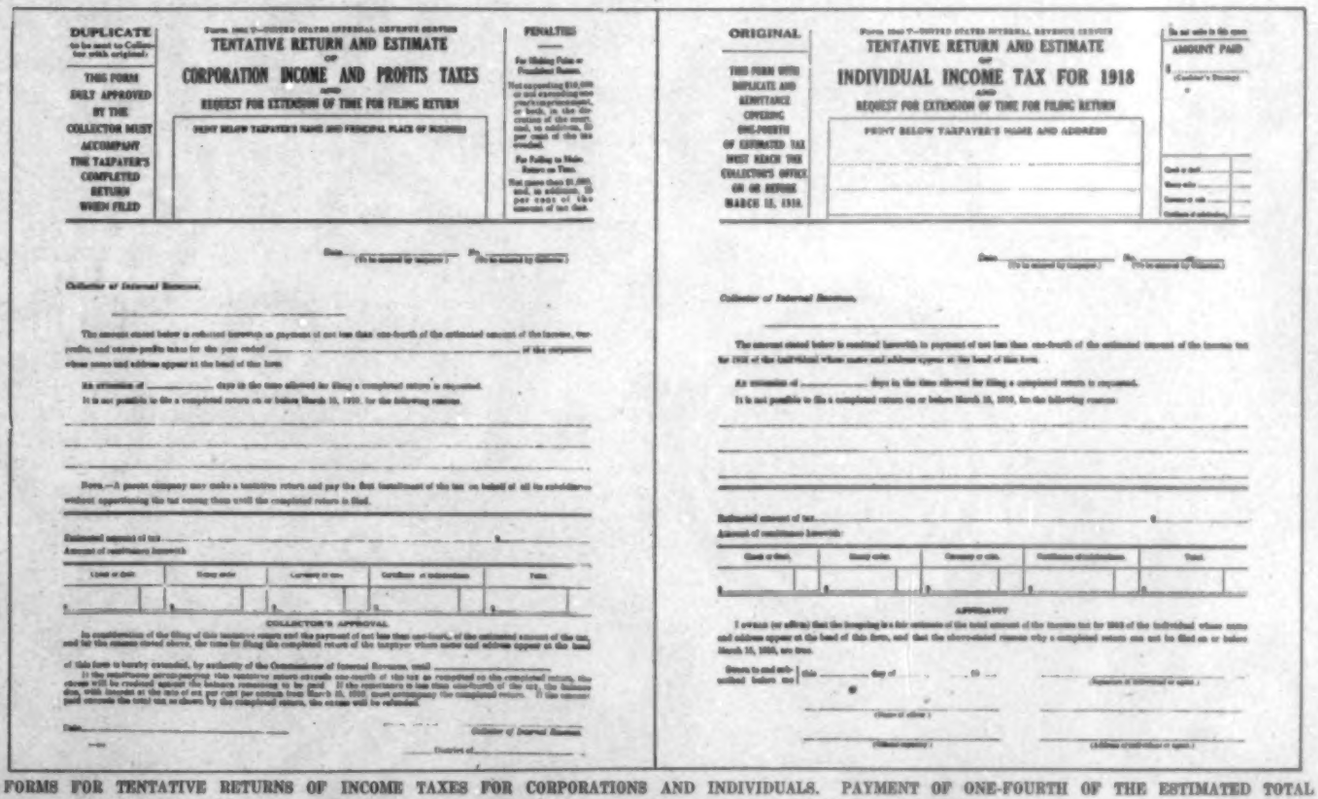
Pennsylvania makers generally report an increased number of new orders and exhaustion of stocks is practically the only reason that can be advanced in explanation. Refractory plants are running at a higher rate than recently was the case, present operations being placed at between 60 and 70 per cent of capacity. A fortnight ago, some plants were not doing much better than 50 per cent of capacity. Some further revision of prices has taken place, with the result that the same price is quoted on first quality fire brick by Pennsylvania, Kentucky and Ohio manufacturers.

Refractories

(Per 1000 f. o. b. works)

FIRE CLAY BRICK (First Quality)	
Pennsylvania	$40.00 to 50.00
Ohio	40.00 to 50.00
Kentucky	40.00 to 50.00
New England	55.00 to 65.00
FIRE CLAY BRICK (Second Quality)	
Pennsylvania	$30.00 to 40.00
Ohio	25.00 to 30.00
New England	48.00 to 58.00
SILICA BRICK	
Pennsylvania	$45.00 to 55.00
Chicago	55.00 to 65.50
Birmingham	45.00 to 55.00
MAGNESITE BRICK (Per Net Ton)	
9 x 4½ x 2½	$90.00 to 95.00
CHROME BRICK (Per Net Ton)	
9 x 4½ x 2½	$100.00 to 110.00
BAUXITE BRICK (Per Net Ton)	
55 per cent.	$ 40.00 base
76 per cent.	100.00 base

A further cut of $5 per 1000 has been made in second quality Pennsylvania and Ohio fire brick. It seems that second quality brick are rather plentiful.



FORMS FOR TENTATIVE RETURNS OF INCOME TAXES FOR CORPORATIONS AND INDIVIDUALS. PAYMENT OF ONE-FOURTH OF THE ESTIMATED TOTAL DUE THE GOVERNMENT MUST BE MADE WHEN THESE FORMS ARE FILED

Iron and Steel Financial News

Up-to-the-Minute Fact and Comment Collected and Sifted For Busy Readers

Business Sentiment Clearly Improves

GENERAL business sentiment has improved perceptibly the past fortnight and operations in the securities markets also have indicated that Wall street has emerged from the fogs of doubt to a clearer atmosphere. The volume of stock trading has increased and the prices of securities have advanced. Speculative interest has converged, it is true, on the industrial shares, for the market for railroad shares still is overclouded by uncertainties as to what disposition the next congress will make of the properties. But the feeling is growing, both in Wall street and out, that a large potential demand for commodities exists, a demand that will be exerted without much further delay. The government is being watched closely, for, controlling the railroads, telegraphs, telephones and navy, it is the largest consumer of all. Like a private purchaser, the government has been waiting for lower prices but cannot wait indefinitely. Whether it reaches an agreement with the various industries or not, it must soon buy. And Wall street feels that when the government does buy, general business will improve rapidly.

Despite the better feeling in industrial and business circles, it is expected a feeling of hesitation will continue until the treaty of peace is signed, for until that time this country's commodities will not find a full market abroad. Export business is not yet what it should be, but foreign consumers have shown considerable interest in our markets. When they feel conditions are right, like private domestic consumers and like our own government, they will buy. This is true of countries outside of Europe, for the belligerents have yet to adjust their economic systems to peace conditions.

Easing Burden of Taxes

Arrangements for payment of taxes in installments and the 45-day extension from March 15 for corporations and business men to make their final tax returns where necessary should prove a decided help between now and the early days of April, when the preparations for the next Liberty loan will be a factor. Wall street still feels that the loan task ahead will be a difficult one and the banks are preparing for the worst, in any event. Meanwhile a good deal of new financing is going ahead in order to raise funds for various projects before the loan campaign engages public attention. A new issue of treasury certificates of indebtedness anticipatory of tax obligations was announced last week, maturing June 16 and bearing interest at 4½ per cent. Other issues of similar character will be accepted in payment of this issue regardless of date of maturity, if they are turned in before March 15, with interest paid to that date. This amounts to payment of taxes in advance and is expected to ease the burden of banks and large business houses. It is now believed the forthcoming bond issue will hardly exceed $5,000,000,000, although the bill now being considered by senate and house conferees provides for a total of $7,000,000,000.

Lackawanna Steel Profits Show Large Decline

Numerous factors appearing in 1918 which combined to hamper the fullest operation of steel companies and to curtail earnings applied fully upon the Lackawanna Steel Co., causing a decline in the year's profits as compared with 1917 of $8,537,875. This is disclosed in the annual income account just made public. One feature of the income account is the item showing $2,767,842 written off for depreciation and accruing renewals against $1,789,058 for the preceding year.

The rate of profit earned on the $35,097,500 common stock outstanding was 23.79 per cent, a decline of 24.32 per cent from the 48.11 per cent earned in 1917. It is interesting to note that the company states that the profit for 1917 has been adjusted, by $779,253 representing difference in amount of federal taxes actually paid and that of amount estimated as previously reported. The amount of the tax estimated for 1918 is not given. In 1916 the company earned a profit of $12,218,234, which was at the rate of 34.81 per cent on common. In 1915 the profit was $2,409,107; in 1914 there was a deficit of $1,990,993; in 1913 the company earned a profit of $2,006,537, and in 1912 it earned $265,043. The highest record of profits in the prewar years was in 1907 with $1,836,185.

Unfilled orders were 314,948 gross tons against 731,526 one year before, a drop of 416,578. The comparative income account follows:

INCOME ACCOUNT

	1918	1917
Total net earn. after taxes and other exp., including ord. repairs and maint.	$12,468,904	$20,573,170
Deduct:		
Interest on bonds	923,558	1,285,356
Subsidiary companies	173,600	101,379
Rentals and royalties	.....	8,542
Total	$1,097,158	$1,485,278
Balance	11,371,746	19,087,891
Less—appropriations:		
For extinguish. of mines and mining investments	255,548	412,603
For deprec. and accr. ren.	2,767,842	1,789,058
	3,023,391	2,201,662
Profit for the year	8,348,354	16,886,229

Wheeling Steel Earnings Decrease; Wages Rise

With a rate of production in 1918 below that of the previous year, the Wheeling Steel & Iron Co., Wheeling, W. Va., had an aggregate payroll for 1918, $1,303,628 in excess of what it was in the preceding 12 months. In his report to stockholders at the annual meeting held recently, President Isaac M. Scott, said that this was brought about by the fact that in 1918, four wage increases had been granted, the most important one being for common labor from 33 to 44 cents an hour. The average number of workpeople employed last year was 4700.

The company's earnings for the year made a poor showing in contrast with the preceding 12 months.

Owing to the uncertainty surrounding some of the provisions of the new revenue law the company omitted an estimate of its tax reservation for 1918, but President Scott said it may be assumed that the taxes will be in the neighborhood of $3,500,000 to $4,000,000. If they reach the higher figure the surplus for the year before dividends will be brought down to $1,580,769 as compared with $4,037,911 in 1917.

Excellent Position

The company is in excellent financial position with current assets of $12,628,167 and current liabilities of $1,512,507. The current assets include inventories of $4,720,718, accounts receivable of $2,028,980 and cash in the bank amounting to $2,117,905. The comparative income account follows:

INCOME ACCOUNT

	1918	1917
Net earnings	$6,305,075	$8,561,519
Dividends and interest	291,661	288,581
Total income	6,596,737	8,849,101
Depreciation and exhaustion	770,467	*4,652,190
Net profit	5,826,269	4,187,911
Bond interest	145,500	150,000
Balance	5,680,769	4,037,911
Dividends	928,714	966,108
Surplus	4,752,055	3,071,803
Stock dividend of Jan. 30, 1918	1,858,200	1,239,080
Net surplus	9,099,424	6,205,569

*Includes $4,058,874 for taxes.

The record of production shows pig iron output in 1918 amounted to 203,456 tons against 209,206 tons in the previous year, while the finished product output in gross tons was 174,267 in 1918 as compared with 195,755 in 1917. The total value of shipments for the year was $27,475,915, for 1917 it was $27,964,341 and for 1916 it was $15,073,530. In 1918 the payroll aggregated $6,452,375, in 1917 it was $5,146,747 and in 1916 it stood at $3,267,096.

Empire Steel & Iron Gain Drops; Position Good

Approximately $600,000 represents the falling off in the earnings of the Empire Steel & Iron Co., Catasauqua, Pa., in 1918, from 1917. Gross income for 1917 was $1,800,250, and 1918, $1,207,029. The net was equal to 18 per cent on the $1,254,770 common stock outstanding as against 50 per cent the year preceding and 28 per cent in 1916.

The company's balance sheet shows total current assets were $1,219,681 and total current liabilities $442,419 as compared with total current assets of $1,598,626 and total current liabilities of $626,078 in 1917. Cash as of Dec. 31, 1918, was $210,350 against $351,508 in 1917. Accounts receivable in 1918 were $187,430 against $546,400 in the preceding year. Inventories in the latest report are given at $818,462, which compares with the inventory valuation of $692,282 in 1917. Total reserves listed in 1918 aggregate $442,669 against $630,162 in 1917. The comparative income account follows:

INCOME ACCOUNT

	1918	1917
Gross income	$1,207,029	$1,800,250
Deductions	212,525	307,076
Total net	994,503	1,593,174
Less tax reserve	467,000	500,000
Contingencies, other reserve	43,000	75,000
Net profits	484,503	1,018,174
Preferred dividends	250,000	387,900
Surplus	234,503	630,674

President Peckitt Explains

Analyzing industrial situation during the year President Leonard Peckitt said that industry was handicapped by five distinct hindrances, namely, an unusually severe winter, congestion of rail traffic, fuel shortage, labor shortage, and influenza epidemic.

Financial Crop Ends

The Vulcan Iron Works Co., Mason City, Iowa, is out of business with no successor. When operating, the company conducted a foundry and machine shop. Clyde H. Trevett is receiver.

* * *

The United States Switch Co., Eau Claire, Wis., a Delaware corporation, capitalized at $1,750,000, has taken out a Wisconsin charter with $300,000 capital, half preferred and half common stock. J. W. Hubbard is president and general manager.

* * *

The Federal Foundry Co. has sold its plant at Chicago Heights to the Quaker Mfg. Co., manufacturer of house heating furnaces. The purchasing company has a plant at Chicago Heights which they will continue to use, this purchase being for the purpose of enlarging its output.

* * *

The Mobile Shipbuilding Co., Mobile, Ala., has changed the form of its capital stock from $1,000,000 paid up stock to 50,000 shares of non par value stock. This change was made to place the company in position to take care of its plans for the future. No enlargement is contemplated at the present time.

* * *

Since it changed its fiscal year, the Moline Plow Co., East Moline, Ill., has issued a report for the 15 months ending Oct. 31, 1918. Net profits were $2,038,779, after deducting all operating expenses, allowing for depreciation of fixed assets, for interest on borrowed money and for bad accounts.

* * *

The Universal Mfg. Co., 491 Broadway, Milwaukee, maker of direct-connected generating units, farm lighting plants and electrical specialties, has been made defendant in bankruptcy proceedings. Julius J. Goetz has been appointed receiver. The first meeting of creditors was held Feb. 27.

Heavy Demand

For Benzol Mixture for Motor Fuel is Market's Feature

New York, March 4.—Demand for benzol mixture as motor fuel continues the bright spot of the coal tar products market. This demand is preventing any accumulation in benzol, toluol and solvent naphtha. Originally, the prices paid for this material for motor fuel were much lower than the market but of late the motor fuel buyers have been willing to pay more. Demand for pure benzol is comparatively small, although much larger than in prewar times. It is believed various industries which became important users of benzol during the war will form a large permanent market. The dyestuffs industry is taking large quantities. During the war, many new pharmaceutical uses for benzol were developed, the rubber manufacturers began buying it on a large scale and other lines of consumption were developed. Solvent naphtha demand is sufficiently active to take up the output, so that in conjunction with the use of this product in mixture with benzol as a motor fuel, there is no tendency toward accumulation. Prices on pure benzol continue 20 to 25 cents. On solvent naphtha, 20 to 25 cents, and on toluol 25 to 35 cents. Toluol demand is small.

Buying of naphthalin continues steady but represents a rather small total; naphthalin in flakes continues 8½ to 9½ cents, and in balls at 10½ to 11½ cents. Phenol demand still is lacking, at something under 15 cents.

Business in sulphate of ammonia this week included a few small lots for export. The demand as a whole, however, is considerably less than the present production.

Coke Oven By-Products

Spot	
Per Gallon at Producers Plant	
Pure benzol	$0.20 to .25
Toluol	.25 to .35
Solvent naphtha	0.20 to .25
Per Pound at Producers Plants	
Phenol	No market
Naphthalin, flake	$0.08½ to .09½
Naphthalin, balls	.10½ to .11½
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$4.45 to 4.55
Contract	
Pure benzol	$0.20 to .25
Toluol	.25 to .35
Solvent naphtha	.20 to .25
Per Pound at Producers Plant	
Phenol	No market
Naphthalin, flake	$0.08½ to .09½
Naphthalin, balls	.10½ to .11½
Per 100 Pounds Producers' Plants	
Sulphate of ammonia	nominal

Obituaries

JOHN B. FINLEY, president of the Colonial Steel Co., Pittsburgh, died at his home in Pittsburgh, Feb. 27, after a brief illness of pneumonia. Mr. Finley had large coal interests and was a director of several corporations as well as being prominently identified with the business and social life of Pittsburgh. He was born in Monongahela City 72 years ago and that city claimed him prior to 1898. When only 14 years old he endeavored to join the Union army, and while his parents scouted the idea, he would not be denied and ran away from home and eventually reached the Union lines. He was not allowed to enlist, but stayed with the company to which he had attached himself. When it arrived at Antietam, the authorities sent him home. In 1898 he located in Pittsburgh. It was there he organized the Monongahela River Coal Co., and subsequently that district sent him to the state legislature. He also engaged in the banking business while a resident of that city. After serving for a time on the board of directors of the Colonial Steel Co. he was elected in 1909 to succeed James W. Brown as president. In addition to being head of the Colonial Steel Co. Mr. Finley was a director of the American Water Works & Electric Co.; the Betz-Pierce Co., Cleveland; the Corona Iron & Coal Co., Alabama; the Mellon National bank, Pittsburgh; the Monongahela & Bellwood Natural Gas Co.; National Fireproofing Co.; Pittsburgh Coal Co.; Union Savings bank, the Union Trust Co. and the West Penn Traction & Water Power Co. and its subsidiary companies. He also was identified with the Monongahela Memorial hospital, the Pennsylvania College for Women, the Washington and Jefferson college, the Western Pennsylvania Exposition society and the Western Theological seminary as a director or trustee.

Robert Russell, president of the Lamb Knitting Machine Co., Chicopee Falls, Mass., died, Feb. 26, at his home in Holyoke, Mass., aged 85. Mr. Russell was president of the Holyoke Savings bank.

Robert W. Read, of Read, Rittenhouse & Co., Philadelphia, iron and steel and forgings, died Feb. 22, at Atlantic City, N. J., following an attack of influenza. Mr. Read was a well known steel salesman and formerly was district sales manager in Philadelphia, for the Pennsylvania Steel Co. At one time he was connected with the New York sales office of that company.

Robert J. Hyndman, aged 63, president of the Hyndman Roofing Co., Cincinnati, dropped dead on the street in that city recently. In 1877, with his father, he established the iron roofing business in which he was active until his death.

Morris E. Fuller, aged 98, a pioneer gas engine manufacturer of Wisconsin, and founder of the Fuller & Johnson Mfg. Co. and other industries at Madison, died recently at Schuyler, Nebr. Mr. Fuller retired about 20 years ago and went to Nebraska to reside.

Judge William J. Turner, president of the Turner Mfg. Co., Port Washington, Wis., tractors and gas engines, died recently at his home in Milwaukee at the age of 71. His son, Lee M. Turner, is vice president and general manager of the Turner company.

Fordyce H. Bottum, vice president and secretary of the Worden-Allen Co., Milwaukee, and widely known as a corporation counsel, was stricken with heart disease in his apartments at the University club in Milwaukee recently and died instantly. He was 63 years of age and a graduate of Harvard, '88.

John Sellers Bancroft, mechanical engineer, died at his home in Philadelphia, recently, after a long illness. Mr. Bancroft was born in Providence in 1843, and learned the machine tool business under his uncle, William Sellers. In 1902 he became vice president and engineer of the Lanston Monotype Machine Co. He achieved notable success in the design of machinery for manufacturing the monotype machine. Mr. Bancroft was vice president of the American Society of Mechanical Engineers.

Sir Joseph David R. Forget, aged 58, of Montreal, prominent financier and industrial organizer, died Feb. 19, after an illness of five weeks. He consolidated and promoted a large number of corporations in eastern Canada and elsewhere, mainly connected with transportation and power development. He was elected a member of the Canadian parliament for Charlevoix in 1904 and retained this position for many years. He received the title of "Knight Bachelor" in 1912.

John Jarrett, former president of the Amalgamated Association of Iron, Steel and Tin Workers, and who played a conspicuous part in the printing of tin plate on the protected list in the McKinley tariff bill of 1890, died at his home at Pittsburgh recently. He was born in Wales in 1842, coming to this country in 1856. In 1877 he was elected president of the Amalgamated association and continued in this office until 1883. He was United States consul at Birmingham, England, for three years in the 80's.

William M. Steele, mechanical engineer, builder of motor trucks and contract machinist, 98-100 Beacon street, Worcester, Mass., died at his home in that city recently, aged 62 years. For many years he was engaged in the manufacture of machinery and various mechanical parts and devices in Worcester, at first in partnership with his brother, Albert H. Steele, now manager of the A. H. Steele Co., steel and iron forgings in that city, and the past 10 years independently. He was the founder of the W. M. Steele Switchboard Co., Worcester.

Joseph Parker Stone, a prominent engineer, died of pneumonia, Feb. 26 at South Bend, Ind. He went to the latter city as representative of Lindeteves Stokvis, New York City, to execute a machinery contract. Mr. Stone was born in New York City 46 years ago and received his education at Stevens Institute of Technology. He had spent many years in South America as representative of the Western Electric Co., and Edison company.

Error is Corrected

Through an unfortunate confusion of identities in a newspaper account, from which it was rewritten, an item in the Feb. 20 issue of THE IRON TRADE REVIEW, erroneously reported the death of A. H. Hunter, president of the Atlas-Crucible Steel Co., Dunkirk, N. Y., when it was meant to announce the death of Gerald W. Hinckley, assistant to the president and ordnance engineer of the Atlas-Crucible Steel Co., which occurred recently. It is a matter of pleasure as well as of truth, for THE IRON TRADE REVIEW to be able to make the statement that Mr. Hunter is alive and in good health.

February Brings Much Tool Trading

Large Inquiries During Month Foreshadow Interesting Developments in March—Many Big Deals Consummated Remind Trade of Prearmistice Period—Automotive Industries Active—France to Make $40,000,000 Purchase

SINCE preliminary events usually precede the major program, a parallel figuratively is shown in the case in the present machine tool market. The preliminaries were held in February; it is being noted that the start of the main event will fall in March. Last month developments came thick and fast and seem to presage bigger things for the future. Splendid progress was made in the month just ended. Large sums which figured so prominently in the market news of the prearmistice period in connection with equipment deals, were heard more often last month than in the two preceding months. Large lists of tools are appearing in two forms; many war plants are disposing of their machinery and other plants are making large purchases.

Automotive Industries Lead Procession

AT the head of the readjustment movement, is the automotive and allied industries. Various automobile interests have occupied a prominent place in the past month's developments. Large inquiries and orders came from the General Motors Corp., for several hundred thousand dollars' worth of tools. These are for the Chevrolet plant at Toledo and for the corporation's other plants at Detroit, Lansing, Pontiac, Bay City, Flint and Saginaw, Mich. The Ford Motor Co., Detroit, is reported to have bought $1,000,000 worth of tools and other automobile manufacturers in that territory purchased $1,500,000 worth. Tractor makers all over the country are getting ready to place large orders for machinery. The General Motors Corp. is sending out inquiries for tools for the Samson tractor plant at Janesville, Wis. The Hollis Tractor Co., Tiffin, O., is expected to have its needs lined up this month. Henry Ford & Son are asking for equipment for a tractor plant on Green Island in the Hudson river, near Albany, N. Y. Manufacturers of automobile parts are looking to their equipment needs. One Ohio manufacturer inquired for 50 machines. The Automobile Screw Products Co., Cleveland, purchased a carload of tools.

Interest in Export Markets Revives

EARLY in the month machinery sellers' interest in the export market lagged. Lately, however, it was renewed. A Cleveland tool dealer received advice from Washington that the cable brings news that France will buy $40,000,000 worth of tools in this country. This carries the conviction that in the export market lies the American tool builder's best hope to take up the excess production attained under war pressure. It is true that a disturbing element interest with the commencement of England's embargo against American-made machinery as of March 1, but this is expected to be temporary only. In the meantime, many lists of tools form foreign countries are before the trade. These include inquiries from South America, Spain, Italy, France, Belgium, Roumania, etc. The Standard Oil Co. of New Jersey, asked for quotations on about 70 tools for shipment to the latter country. These are for a tank shop and include drills, punches and shears, drilling and milling machines. Two inquiries came from Belgium for 30 or 40 machines. A desire exists to replenish Norwegian tool stocks. The Framerican Industrial Development Co., New York, issued a large list of fabricating machines and machine tools for a shipyard in France. Another list of about 30 tools for a French shipyard has been put out by Russell B. Smith, 50 East Forty-second street, New York. The Liberty Steel Products Co., New York, asked for prices on 37 machines for a shipyard at Kobe, Japan.

Shipbuilding Takes New Lease on Life

INTEREST in shipbuilding is again on the increase. Shipyards are at work on contracts received before the end of the war and since. This is reflected in the number of inquiries received for tools. Activity among the ship repair plants is told by the large number of revived projects. The Norfolk-Hampton Roads Ship Repair Corp., Norfolk, Va., is to go ahead with its $7,500,000 plant. A large list of tools came from the Bartlett-Hayward Co., Baltimore. It comprises 75 machine tools, hoists, etc., for a $4,000,000 repair plant.

Government-owned Equipment Still Disturbs

MUCH attention continues to be given by the trade to the subject of government-owned machinery. Dilatory tactics on the part of federal agents have a disturbing influence upon the market. Notwithstanding the agreement that this equipment was to be sold through manufacturers, several lists have appeared in the open market. This coupled with the fact that makers have been asked to store what government-owned equipment they have on hand, has created uncertainty. The Ohmer Fare Register Co., Dayton, O., whose equipment, including 400 milling machines is said to be federal-owned, is making disposition of it.

Great Activity in Used Machinery Market

SOME of the biggest deals of the month were made in second hand machinery. This was so much the case that the sale of new machinery was affected in some districts. War plants are disposing of their equipment and are equipping themselves for peacetime production. The Spencer Mfg. Co., Toledo, O., sold 116 lathes and 36 drill presses. Two other lots were sold in Massachusetts. The Burroughs Adding Machine Co., Detroit, bought $10,000 worth of used tools. The Biggs-Watterson Co., Cleveland and Dayton, is disposing of 1000 tools from the plant of the Dayton Metal Products Co., Dayton. Equipment from several Chicago plants, is appearing in the market. This includes machines from the plants of the Amalgamated Machinery Corp., the Chicago-Symington Corp., and American Steel Spring Co.

Miscellaneous Inquiry Maintains High Rate

GENERAL inquiries from miscellaneous industries were particularly heavy last month and orders placed should represent a large total. The Bucyrus Co., Milwaukee, asked for about 30 tools. A large number are wanted by a Pittsburgh forging interest. The New Process Gear Corp., Syracuse, N. Y., want 50 tools, including shapers, drilling machines, turret lathes, etc., for gear work. Railroad inquiries are few. Practically the only road in the market is the Pennsylvania. It closed on some small lists as did the Chicago & Alton and the Rock Island.

Equipment Market's Tone Improves

Users Who Have Been Awaiting Lower Prices Begin to Realize They Must Buy Now —Export Business Has Upward Trend—$40,000,000 French Purchase Probable—Signing of Informal Contract Bill to Bring Business

FAVORABLE reports from machine tool centers show that the market's tone continues to improve. This is particularly true in the middle west where a number of users have decided that it does not pay to wait for reduced prices. Some reductions have been noted but these fall short of compensating users for the length of time they have denied themselves the output of the machines needed. Several plants have placed their equipment for quick sale at low prices and are buying new machinery at the prevailing market prices.

Two other factors have added to the general optimism. The bill to validate informal war contracts has become a law and this is expected to open up much new business. Manufacturers now will be able to make financial arrangements which will permit them to purchase equipment for a resumption of normal business. The building supply industry has reduced some prices to stimulate building and this will encourage many to arrange for expansions which will bring them into the equipment markets.

Industries closely identified with the automotive field continue to send out the largest inquiries. Among them is the Jones Gear Co., Cleveland, which is to erect buildings to manufacture gears for trucks, trailers, tractors and automobiles. The Ohio General Tractor Co., Cleveland, likewise will soon enter the market. In the Chicago territory, trading is mostly in small sales and no large lists are being received. There it is unofficially announced that the Cribben & Sexton Co. equipment will be stored or used at the Rock Island arsenal. In Pittsburgh, the few orders placed are out of proportion to the large number of inquiries received.

Great impetus recently has been given the export machine tool market in the east. Some of this has reached Cleveland. One inquiry in particular from Belgium calls for 64 tools and four cranes. In New York the French high commission issues tool inquiries almost daily. Numerous requests have been received for prices from private interests in France and Belgium. Official advices that individual French interests will buy $40,000,000 worth of American tools subject to credit arrangements has given the export market a distinctly better tone. Additional punches are wanted by the Liberty Steel Products Co., New York, for a shipyard at Kobe, Japan. This inquiry likewise reached a Cleveland dealer. F. E. Childs & Co., New York wants 16 machines for Cuba.

Railroad business remains out of the market. It is thought in some quarters that many of the tool requirements of federal-owned railways will be met from the government's own tools. The Baltimore & Ohio wants a few machines. The Pennsylvania lines west issue inquiries from time to time but place few orders. In Pittsburgh it is said that no appropriation has been available for machinery purchased by the government's railroads since Jan. 1, 1919. Drydock construction by and for the Emergency Fleet corporation is expected to develop a large number of machine tool needs.

Export Tool Inquiry Takes Decided Upward Trend

INTEREST in the eastern machine tool market is rapidly becoming centered upon developments in the export situation. While there has been little large buying, inquiries for the shipment of machinery abroad are coming before the trade in increasing numbers and volume. One of the most active factors in the export situation at this time is the French High Commission, 65 Broadway, New York. Through this organization quite a little buying has been done of late, and new inquiries for tools of one description or other are being issued almost daily, although they are not being generally distributed. Numerous inquiries are also in the market from private interests in France, although sellers are inclined to believe that many of these are being made with a view to obtaining data for estimating claims. It is believed, too, that every effort will be made by the French government to confine as much of the machine tool demand as is feasible to its own industry but at the same time the definite official statement that the French government will allow purchases by individual companies up to a total of $40,000,000 shows a fine prospect for American business. Inquiries have also been coming out in better volume from Belgium, and one of the largest of these has just been issued through a Philadelphia concern of consulting engineers, calling for 25 to 30 tools. Another exporter, the Liberty Steel Products Co., Woolworth building, New York City, has issued an additional list, involving 10 vertical punches and eight horizontal punches for a shipyard at Kobe, Japan. This company, in addition to cranes mentioned last week is in the market for 11 three-ton electric hoists for the Japanese yard. The F. E. Childs Co., Inc., 47 Williams street, New York City, has issued the following list for shipment to Cuba: 42-inch high-speed radial drill; 18-inch high-speed sensitive drill; 24-inch crank shaper; one each 12 x 14-inch, 18 x 20-inch and

Teeming One of Our Electric Crucible Furnaces

Ludlum Electric Crucible Steel

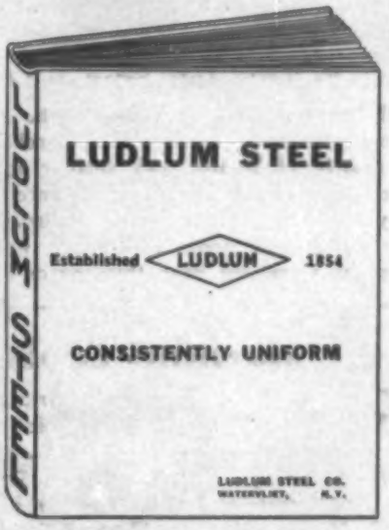
Every visitor to our plant tarries awhile here—for it is very fascinating to watch a Ludlum Electric Crucible Furnace teeming into the ladle.

The Ludlum Electric Crucible Furnace was developed entirely by us, to meet our own individual requirements. It produces unexcelled quality of absolutely controlled analysis.

Do you realize that the majority of twist drill and milling cutter manufacturers in America are using Ludlum Steels?

Ludlum "Consistently Uniform" Brands,

MOHAWK EXTRA — High Speed Steel
POMPTON — Carbon Tool Steel
ALBANY — Alloy Tool Steel
ONEIDA — Oil Hardening Tool Steel
HURON — Alloy Die Steel
TETON — Ball Bearing Steel
YUMA — Chrome Magnet Steel
SEMINOLE — "Fool Proof" Chisel Steel



This LUDLUM—Text Book is a complete treatise on the various tool steels. It describes the correct method of forging, hardening, tempering, annealing. It contains accurate calculation tables and other valuable information. Just ask us for it and it's yours, **free.**

LUDLUM STEEL COMPANY

General Offices and Works
WATERVLIET, N. Y.

Branch Offices
New York City Philadelphia Cambridge Cleveland Cincinnati Detroit Chicago Buffalo

28 x 30-inch engine lathes; 28 x 54-inch heavy duty lathe; a 42-inch x 12-foot planer; 36-inch hand-operated metal plate shearing machine; 12-inch emery wheel, power-driven grinder head; one each ¼-inch to 4-inch and 4-inch to 12-inch pipe machines; 2-inch or 2½-inch bolt-cutting machine, and a 36-inch power-driven grinder. A Baltimore engineering concern is inquiring for 10 or 12 standard machines. The Baltimore & Ohio railroad is inquiring for a few tools including 2500-pound steam hammer. The Consolidated Rolling Mills, 25 Broad street, New York, is in the market for a 1000-pound drop hammer.

While domestic inquiry is far from active, sentiment continues to improve. A special factor in this improvement is the final passage of the bill validating $2,700,000 worth of informal contracts, of which $1,600,000 is due manufacturers in this country. This will not only enable many manufacturers and contractors who have been greatly embarrassed by the delay at Washington, to continue present work, but also to begin new enterprises. It is understood that the Emergency Fleet corporation has considered favorably the bid recently submitted the Girard Dry Dock & Construction Co., Philadelphia, for the construction of twin dry docks, costing approximately $5,000,000, in that city. According to Howard M. Coonley, vice president of the Emergency Fleet corporation, arrangements have now been practically completed for the construction of 19 drydocks in the east, 10 of which are to be located in New York and vicinity, five in Boston, three at Philadelphia, and one at Baltimore. An appropriation of $34,000,000 was made by the government some time ago for fostering this work, the fleet corporation being authorized to advance 70 per cent of the cost of construction to individuals undertaking such projects, but so far, according to Mr. Coonley, virtually has been spent.

Little activity prevails in the eastern crane market. Several propositions are before the trade, but buying continues small.

No Large Lists Extant in Chicago

TRADING in machine tools in the Chicago district continues to be made up of purchases by smaller shops, mostly of lighter and smaller machines. There have been no recent instances of large lists, or extensive buying by important users. Railroads inquire occasionally for single tools, but have not been buyers. Nothing has come out from this source at all in keeping with the real needs of railroad shops and until the railroad administration gives permission this bunch of buying will be backward.

Most equipment sales now are being made with a guarantee against decline covering varying periods and the tendency of this agreement is to prevent lower prices being made by manufacturers. It is understood unofficially that the shell-making equipment bought by the Cribben & Sexton Co. and not used, on which bids were opened recently, will not be sold but will be taken to the Rock Island arsenal and there stored or used, as occasion dictates. This equipment runs to about $200,000. It is understood that checks accompanying bids have been returned.

Healthy Rate of Inquiry Maintained

VARIOUS factors combine to cause improvement in the machine tool market in the Cleveland district. Foremost among these is the decision on the part of a number of users to wait no longer for price reductions but to sell out their used machinery and buy new tools at the prevailing market. This is true of the Peterson Machine Co., and several others. While several reductions in prices have been noted on planers, shapers and radial drills, these have been so slight that users have come to the conclusion that it does not pay to wait. This has brought several fair sized inquiries to Cleveland dealers and several orders have been placed.

Another factor that gives an improved tone to the market is the signing of the bill to validate informal war contracts. While it will take considerable time for manufacturers and contractors to obtain settlements from Washington, the President's signature on the bill has ended the uncertainty which has prevailed and these users of equipment now can go ahead with their plans. They will be able to finance various projects with their banks on the strength of these near future payments by the government. Equipment needs will receive first consideration and dealers are confident that March will be a banner month if it continues the way it has started.

A third item which is looked on with favor in the machine market, is the attitude of the building supply people in reducing prices to stimulate building. This is in harmony with the "build now" campaign, started at Milwaukee recently on the occasion of the eighth annual convention of the National Association of Builders' Exchange. With lower prices prevailing in building supplies, many projects now in the formative stage will be

Machine Tools May be Sold Directly in France

FRANCE has removed all barriers at least for the time being, to the entrance into that country of American-built machine tools, according to a letter received recently in Cleveland from George N. Peek of the war industries board. The communication was to G. E. Merryweather, president of the Motch & Merryweather Machinery Co., formerly chief of the machine tool division of the war industries board. It is inspired by a cable from former chairman of that body, Bernard M. Baruch, who at present is in France. It reads as follows:

"We have a cable from Mr. Baruch, indicating that the French government is willing to allow sales to French merchants of $40,000,000 worth of machine tools, conditioned upon commercial credits being arranged for one year.

"By this we understand that it is the intention that individual American companies are to deal directly with the individual French companies, under the same conditions as formerly existed, except involving deferred payments."

Reference to this large inquiry from France was made in the New York machinery market report on page 594 of the Feb. 27 issue of THE IRON TRADE REVIEW, *and has created an improved feeling in the market as to the possibilities of disposing of large stocks of equipment abroad, which seemed to be held up indefinitely by embargoes, consortiums, etc. Of late it has been necessary for the manufacturer in France, who was in the market for machinery, to submit his requirements to a board or commission and if by any means it was possible to supply his needs in France, this was done. Only as a last resort were orders sent to America. While this was accepted as a natural attitude in view of France's desire to rehabilitate her own industries, it has been felt on this side that quicker results could be accomplished by admitting machinery from foreign countries, particularly America, with the latter's increased facilities brought about by the war, to supply large quantities of equipment in a short space of time.*

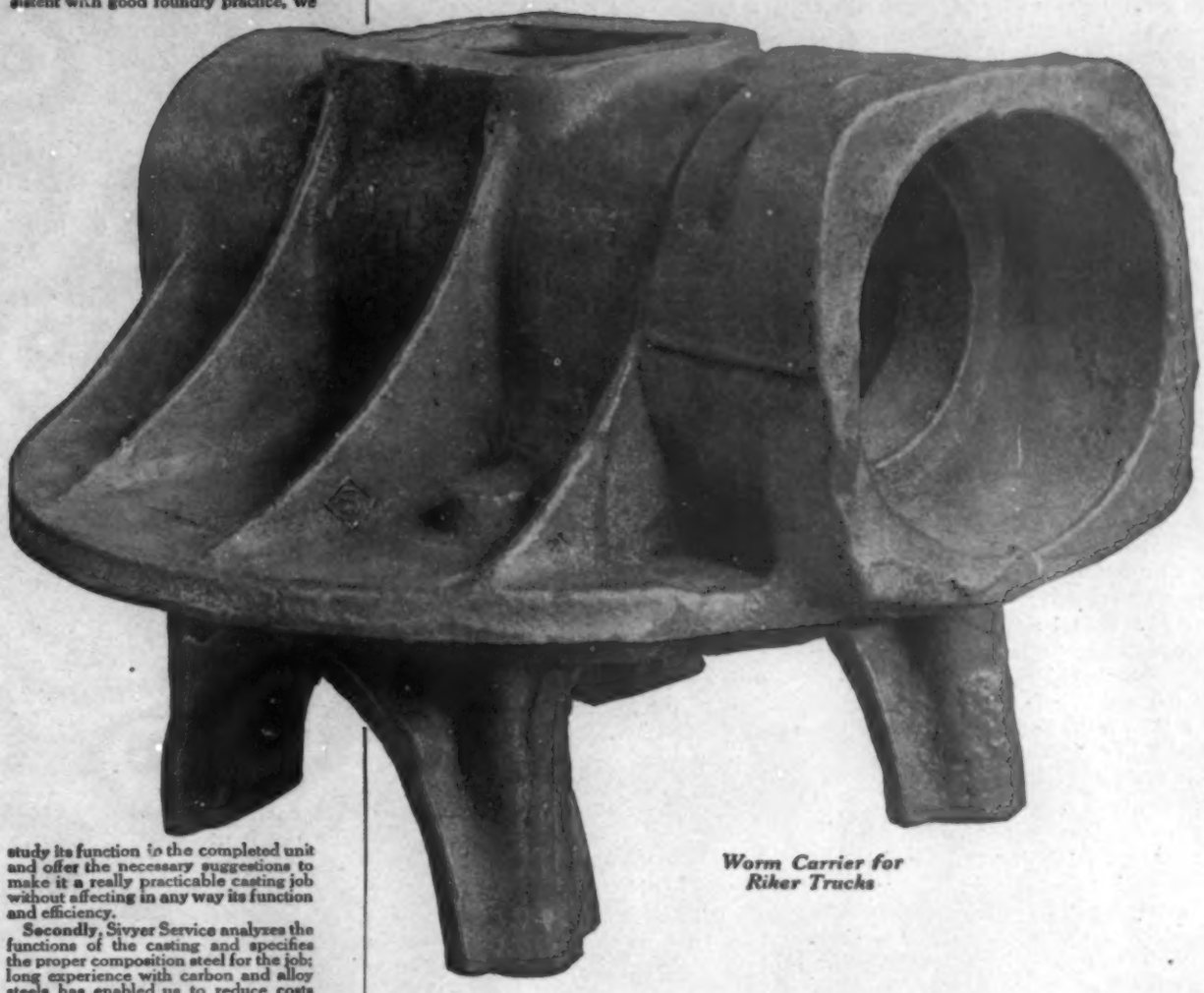
The Sivyer Service of providing Electric Steel Castings has for its objects the decrease of machining costs and the increase of wearing-quality and life. Both are attained by methods which result from long experience and begin with the design of the casting itself. When we find that a casting we are asked to furnish is of a design not consistent with good foundry practice, we study its function in the completed unit and offer the necessary suggestions to make it a really practicable casting job without affecting in any way its function and efficiency.

Secondly, Sivyer Service analyzes the functions of the casting and specifies the proper composition steel for the job; long experience with carbon and alloy steels has enabled us to reduce costs and increase quality remarkably for many different industries.

Thirdly, Sivyer Service makes a careful study of the pattern and molding problems involved, for improper gating and insufficient risers are often the greatest wasters of machining labor and metal.

Fourthly, Sivyer Service analyzes carefully the proper annealing methods to be used and controls their proper application through unfailingly efficient equipment and men. In short, the Sivyer Service supervises every step necessary to secure unusually and unfailingly good castings of electric steel. It never relies on one factor alone, relies very little even on the natural freedom of electric steel from occluded gases and on its commonly recognized merit in resisting crystallization. It also depends but little on the inherent scientific accuracy of the electric furnace process. From casting-design to sand-blasting and tumbling, the fundamental superiority of Sivyer Steel is due to its men and metal. Their value is best proved by the fact that, although the production of steel castings is generally looked upon as a local one, the Sivyer market is national.

SIVYER (S) CASTINGS



Worm Carrier for Riker Trucks

SUCCESSFUL solutions of the molding and riser problems involved in making such parts as worm carriers are typical of Sivyer Castings. Proper coring out, and the avoidance of shrink holes and cracks where the thin parts join the thick, mean much to the truck manufacturer in the matter of reduced machining costs. And they mean still more to him, and to the user of his product, by making sure of strength and long life.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

Say you saw it in THE IRON TRADE REVIEW

consummated and the way opened up for many sales of machine tools and equipment.

Additional orders have been received by the Biggs-Watterson Co., Cleveland and Dayton, on the large lot of tools it is selling from the plant of the Dayton Metal Products Co., Dayton. This company is in receipt of an inquiry from London, for shipment to Brussels, Belgium. It covers about 65 machine tools and four cranes. Several other inquiries have been received by dealers and makers from abroad and it is thought that the export market holds much of promise although actual business is not expected before two or three months.

Miscellaneous inquiries are received in fair volume. One Cleveland dealer is at work on an inquiry received Tuesday for about $50,000 worth of tools. He had just received the order for two large machine tools from a rolling mill interest which aggregated $45,000. The Ohio General Tractor Co., with offices in the Guardian building, has leased four buildings and is getting ready to assemble tractors. It now is in the market for equipment. An 11-acre site has been selected by the Jones Gear Co., Cleveland, and it will erect its buildings as soon as possible. It will manufacture gears for automobile, truck, trailer and tractor manufacturers. Already, it is looking after its equipment requirements and is receiving quotations on two 19-inch x 8-foot, and one 20-inch x 10-foot heavy duty engine lathes and one 16-inch x 6-foot backgeared lathe; one 10-inch automatic tooth-rounding machine, one 18-inch tooth-rounding or champfering machine and one 12-inch tooth rounder; three 3 x 36-inch Jones & Lamson turret lathes; three No. 3 gear hobbing machines; one No. 6 36-inch gear shaper and one 36-inch gear shaper; one No. 3 and one No. 4 broaching machines; one No. 3 Brown & Sharpe horizontal, one No. 2 Cincinnati plain, one No. 2-B Kearney & Trecker plain, one No. 28 Osterline universal and one No. 2-B Milwaukee universal milling machines; one each 4-foot, 3½-foot, 3-foot radial drills and one 26-inch upright drilling machine; one 24-inch Gould & Eberhard shaper and one 20-inch Smith & Mills backgeared shaper; three No. 4 1½-inch W. & S. hand screw machines and four No. 4 Fostern friction-geared head screw machines with power feed. The Geo. F. Foss Machinery & Supply Co., wants one single or double end punch with structural jaws with a 24-inch throat. The J. J. Meier Machinery Co., New York, is endeavoring to obtain a 30-inch geared head lathe, 22 feet between centers and one with 60-inch swing and 14 or 15 feet between centers. It also is inquiring for a used 48-inch x 48-inch x 12 or 14-foot planer and one each 4, 5 and 6-foot radial drills. The Wisconsin Machinery & Mfg. Co., Milwaukee, wants Norton grinders, Warner & Swasey screw machines and Kearney & Trecker milling machines, either new or used.

Prospective purchasers in the Cleveland tool market include the A. R. Bullock Electrical Machinery Co., Cleveland, which is expanding; the Champion Machine & Forging Co., 3695 East Seventy-eighth street, whose addition is about 50 per cent completed; the Mansfield Steel Corp., Detroit, formerly the J. E. Bolles Iron Works, manufacturer of automobile body frames and parts, which is to spend approximately $100,000 on new buildings; the Anderson Electric Car Co., Cleveland, which is to enlarge its plant to manufacture industrial trucks; and the Kuhlke Machine Co., Akron, which was recently organized with $500,000 capital. The Cleveland Automobile Co., Cleveland, is having equipment purchased for its new plant soon to be built by the Chandler Motor Car Co. A. C. Schodorf, 121-123 Center street, Columbus, O., is in the market for wood-working machinery.

Few Tool Purchases in Pittsburgh

SOME inquiries are coming out for machinery and tools in the Pittsburgh district but they are all out of proportion to the actual orders. Agents and dealers, handling light machinery, report actual business to be extremely limited and that in a number of instances sales of new equipment have been lost because buyers have found what they were looking for among used offerings. The Pennsylvania railroad, lines west, has been putting out some inquiries, but has placed no orders lately and in explanation, it is stated that the necessary appropriation is not available; in fact, it is said the railroads under government control have been without funds for equipment purchases since the first of the year. Excess profits taxes for 1918 are due soon and it also is said that the government is slow about making payments in the adjustment of cancelled war contracts. These conditions are not conducive to purchases. Heavy equipment is not being ordered, as the projects calling for it still are in the estimating stage.

New Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Factories

PORTLAND, ME.—The Franklin Service & Sales Co. has been incorporated with $50,000 capital, to operate a foundry and machine shop, by Percy F. Frost, Clair R. Marsten, Waterville, Me., and Sidney F. Thaxter.

BOSTON.—It is reported that a $5,000,000 dry dock and repair plant will be erected by the Boston Dry Dock & Construction Co.

CHELSEA, MASS.—The Richard T. Green Co. is having plans prepared for the construction of a drydock.

EAST BOSTON, MASS.—The Mead Morrison Mfg. Co. is building a 1-story machine shop extension.

LEE, MASS.—The plant of the H. C. Clark & Son Machine Co. recently was destroyed by fire. At present plans have not been made as to rebuilding.

QUINCY, MASS.—The Campbell Machine Co. has been incorporated with $50,000 capital, by Waldo C. York, John A. Campbell, Wollaston, Mass., and Thomas E. Burd.

SALEM, MASS.—The Jones Machine Co. has been incorporated with $50,000 capital, by Frederick W. Dunn, Albert F. Jones and George M. Faulkner.

SPRINGFIELD, MASS.—The 2-story office building of the Wason Mfg. Co., car wheels, was damaged by fire recently.

WORCESTER, MASS.—The Boston Pressed Metal Co. recently purchased additional land, but does not contemplate any immediate building, although the property will be held as a site for future building.

PROVIDENCE, R. I.—The Interstate Construction Co. has been awarded a contract by the United States Shipping board to build a 60 x 304-foot ma-

Coaling Boats at Tidewater

A W-S-M movable car dumper and a W-S-M coal loading tower are used by the Southern Railway Company at Charleston, S. C., for loading coal from cars to boats at tidewater.

The car dumper, which runs on the tracks elevated above the dock, receives the cars and dumps the coal into the hopper of the loading tower on the lower tracks. By elevating the rear end of the hopper, the coal is dumped on to a flight conveyor and transferred through a telescopic chute into the cargo hold. Under ordinary conditions, where the coal is going direct from the dumper through the tower into the boat, the hopper is tilted in a stationary position where it acts simply as a chute between the dumper and the conveyor.

After placing the proper amount of coal in one of the cargo holds, both machines move on to another hatch.

More than thirty cars of coal per hour may be loaded into boats or barges.

The Wellman-Seaver-Morgan Company
CLEVELAND, OHIO, U. S. A.

chine shop for the Marine Engineering & Dry Dock Co. at Field's Point.

NEW HAVEN, CONN.—A $40,000 plant will be erected here by the New England Iron Works. Proposed structure will be 1-story, 60 x 150 feet.

NEW BRITAIN, CONN.—The New Britain Tool & Mfg. Co. has been incorporated with $100,000 capital by C. Adrian Carlson, Charles G. Hammar, Rudolph Sandburg and E. William Carlson.

ROCKY HILL, CONN.—The Connecticut Foundry Co. is reported to be planning the erection of a foundry, 100 x 160 feet, estimated to cost $40,000.

SEYMOUR, CONN.—The Liberty Engine Co. has been incorporated by E. H. Rolston, John Swan, D. D. Gardiner, New Haven, Conn., and H. S. Kenney, Bridgeport, Conn.

STAMFORD, CONN. — Bids have closed for a 60 x 100-foot foundry for the H. & H. Foundry Co., estimated to cost $40,000.

WATERBURY, CONN.—The Scovill Mfg. Co. will erect a 1-story, 124 x 197-foot plant addition, at an estimated cost of $50,000.

WATERBURY, CONN.—The American Brass Co. plans the erection of a pump house at a cost of $10,000.

Along the Atlantic Coast

BROOKLYN, N. Y.—The Cameron Machine Co., 61 Poplar street, is reported to be planning the construction of an assembly shop.

BUFFALO.—The Ross Heater & Mfg. Co. is arranging to build a plant 50 x 75 feet.

BUFFALO.—The Buffalo Dry Dock Co. has had plans prepared for a punch shop on Canson street to cost $20,000.

BUFFALO.—The Pierce Plating Corp., finished and plating metals, has been incorporated with $15,000 capital, by C. G. Erb, E. Ekedahl and J. N. Pierce.

ELLENVILLE, N. Y.—Dwight Divine & Sons, proprietors of the Ulster Knife Co. plans the erection of a building, 46 x 56 feet.

LOCKPORT, N. Y.—The Lockport Hydraulic Race Co. is reported planning construction of a hydraulic electric power plant and other improvements.

NEW YORK.—The plant of the Manhattan Perforated Metal Co., 237 Centre street, recently was damaged by fire.

NEW YORK.—The plant of the Dubilier Condenser Co., Inc., 217-9 Centre street, recently was damaged by fire.

NEW YORK.—J. Shewan & Sons, Twenty-seventh street, have awarded a contract for the erection of a 1-story, 60 x 110-foot shipbuilding addition. This improvement is estimated to cost $15,000.

NEW YORK.—The North American Electrical Products Corp. has been incorporated with $200,000 capital, by M. F. Riley, H. C. Schiffmacher, and J. Bernhard, 701 West 179th street.

NEW YORK.—The Delta Foundry & Machine Corp. has been incorporated with $250,000 capital, by F. C. Reilly, 995 West End avenue, F. J. McCaul, Yonkers, and J. P. Shea, 116 Fifty-seventh street, Brooklyn.

NEW YORK.—The Alloy Metal Wire Co., Inc., has been incorporated to manufacture wire, metals, etc., with $30,000 capital, by J. A. Marcato, 42 Wellesley avenue, Yonkers, E. H. Cleary, South Ozone Park, Long Island and S. A. Murray, Morristown, N. J.

PASSAIC, N. J.—The Hudson Auto Engineering Co. has been incorporated to manufacture automobiles, with $200,000 capital, by Christopher Hudson, Arthur Hudson and Fred Hudson.

SYRACUSE, N. Y.—The Standard Lock Co., Inc., has been incorporated to manufacture locks, tools, dies, etc., with $50,000 capital, by E. L. Wilcox, John P. Yohr and James S. Lemon.

ATHENS, PA.—The Ingersoll Rand Mfg. Co. has had plans drawn for the erection of a machine shop estimated to cost $50,000.

BETHLEHEM, PA.—The Bethlehem Steel Co. will make improvements to its plant.

BROWNSVILLE, PA.—The Diamond Coal Co., Pittsburgh, will build a machine and repair shop, 45 x 90 feet.

ELLWOOD CITY, PA.—The Ellwood City Nail Co. has let the contract for a machine shop 34 x 40 feet and a warehouse 40 x 160 feet.

ERIE, PA.—The Browning Folding Machine Co. plans to build a plant.

HARRISBURG, PA.—The Belmont Motors Corp. will build a plant at Lewiston, Pa.

MEADVILLE, PA.—The Meadville Malleable Iron Co. will build a 1-story power plant to cost $10,000.

NEW CASTLE, PA.—The Pennsylvania Iron & Steel Co. has been incorporated to manufacture iron and steel products, with $100,000 capital, by A. H. Simpson, John J. Book and Edward A. Attridge. The company will locate at Ellwoff, Pa.

CHRISFIELD, MD.—Charles D. Griddell plans to build a plant to manufacture cutlery.

WASHINGTON.—The bureau of yards and docks has taken additional bids from the J. S. Rogers Co. and Wark & Co. for the construction of shipbuilding slips at the League Island navy yard.

Central States Activities

APPLETON, WIS.—A boiler shop and other improvements to its plant and equipment, are planned by the Northern Boiler & Structural Works. Additional land has been bought and tentative plans are being prepared. William H. Timm is president.

DE PERE, WIS.—The DePere Mfg. Co., boiler and structural works, is reported to be planning the purchase of additional equipment. The company recently completed erection of a plant addition, and the other buildings are being remodeled.

FOND DU LAC, WIS.—Sam Manis, dealer in scrap iron, etc., is erecting a 2-story addition, 20 x 80 feet, and will equip it with machinery for cutting scrap.

FORT ATKINSON, WIS.—The James Mfg. Co. contemplates the erection of an iron foundry. The company has a plant at Elmira, N. Y.

GREEN BAY, WIS.—The Carl Hartmann Co. is reported to be planning construction of a drydock at a cost of $300,000.

GREEN BAY, WIS.—The Northwest Engineering Works, shipbuilder, plans to take over the plant erected for the Lawson Aircraft Corp., and use it as a machine and repair shop.

JANESVILLE, WIS.—A new factory, power house and office building, will be erected by the Parker Pen Co. Plans are now being prepared. George S. Parker is president.

KAUKAUNA, WIS.—The Hochne Machine Co. is building a shop addition which will cost about $10,000. Equipment is now being purchased.

KENOSHA, WIS.—Architects White & White are preparing plans for a 1-story shop and factory building for the K. & T. Specialty Co.

LOGANSVILLE, WIS.—Leicher Bros. will build a small plant for the manufacture of commercial car units.

MADISON, WIS.—The Bark River Bridge & Culvert Co. has leased acreage along the Illinois Central railroad right-of-way and will build a plant for the manufacture of steel and corrugated metal culverts.

MANITOWOC, WIS.—The McMullen & Pitz Co., engineers, have the contract for the construction of new docks for the city.

MANITOWOC, WIS.—The Manitowoc Plating Works, 1022 South Tenth street, will build a 1-story shop addition, 38 x 110 feet. Plans have been drawn by Pitz & Peltzsin, consulting engineers.

MANITOWOC, WIS.—The capital stock of the Wisconsin Machinery & Mfg. Co. has been increased from $50,000 to $100,000 and its plant will be enlarged. Louis E. Vogel is president and general manager.

MARSHFIELD, WIS.—Bids will be taken until March 15 by the board of education, for the erection of a junior high and vocational school, estimated to cost $75,000.

MILWAUKEE.—The Sterling Wheelbarrow Co. contemplates erecting an addition to its plant, which will contain as much floor space as the company at present occupies. Details will be announced later.

MILWAUKEE.—The Worden-Allen Co. has the contract to construct a compressor house, 35 x 120 feet for the Prest-O-Lite Co., 619 Trowbridge avenue.

OCONOMOWOC, WIS.—Architects Marshall & Fox,

Government Inquiries

BIDS on the following equipment are desired by the navy department, bureau of supplies and accounts.

One band resaw, 3789, San Diego, Cal., March 25.

Ten 24-inch upright drills, all geared; 21 heavy duty, radial drills, motor drive; four triple geared, heavy duty engine lathes, complete, motor drive; two heavy duty turret lathes, complete, motor drive; eight complete turret lathes, motor drive; 3800, Norfolk, Va., March 25.

One double frame steam drop hammer, 3735, Boston, March 11.

One derrick hoist with boiler complete, three wood lathes, motor drive, 3742, Norfolk, Va., March 11.

Five woodworking turning lathes; four hand planers and jointers; miscellaneous band saws, 36-inch, motor driven; four motor and belt driven, single cylinder surfacers; 3757, Brooklyn, March 18.

One vertical, convertible shearing machine, 3741, Charleston, S. C., March 11.

One adjustable speed, motor and controller, 3787, Washington, March 18.

Six sensitive single spindle drill presses, 3772, Washington, March 18.

One No. 40 special horn press; one No. 97 special geared horn press and one set of dies for cutting openings in 21-inch torpedo afterbody, 3758, Alexandria, Va., March 18.

One milling machine, 3835, Washington, March 25.

One wood-working machine, 3847, Brooklyn, April 4.

One tenoning machine, 7830½, Norfolk, March 11.

One bench lathe, 7832½, Philadelphia, March 14.

Schedule numbers, dates of opening and places of delivery follow the specifications of the tools.

Chicago, are preparing plans for a $20,000 garage and repair shop, 32 x 115 feet, for F. W. Moldenhauer.

PORTAGE, WIS.—Engineers of the state highway commission ae preparing plans for a 60-foot steel span over the Wisconsin river at Pacific, Wis. Bids will be taken about March 20, by J. T. Henton, county highway commissioner.

SHEBOYGAN, WIS.—Bids will be taken soon for the erection of a steel bridge to cost $75,000 over the Sheboygan river. Plans are being drawn by C. U. Boley, city engineer.

TWO RIVERS, WIS.—The plant of the Two Rivers Plating Works recently was badly damaged by fire. The company will construct a new plant at a cost of $30,000.

WATERTOWN, WIS.—The Monarch Tractor Co., manufacturer of gas and kerosene tractors, plans to build plant additions, for machine shop and warehouse purposes. W. N. Smith is president.

DETROIT.—The Holley Kerosene Carburetor Co. is reported to be planning erection of a factory and office building to cost $50,000.

DETROIT.—The Standard Screw Products Co., 621 Bellevue avenue, has had plans drawn for the erection of a factory, 60 x 101 feet.

KALAMAZOO, MICH.—Fuller & Sons, manufacturers of auto parts, are reported planning to construct a new plant. W. P. Fuller is secretary.

MUSKEGON, MICH.—The Muskegon Truck Co., capitalized at $4,325,000, has been chartered in Delaware to manufacture motor trucks, by C. E. Johnson of Muskegon, Joseph Tuselaar of Grand Rapids and H. L. Schuh of Lowell, Mich.

WYANDOTTE, MICH.—Bids will be received until March 18 by E. C. Bryan, city clerk, for two low-lift motor-driven centrifugal pumping units of 2100 and 4200 gallons capacity and a steam-driven pumping unit of 5,000,000-gallon per day capacity.

BERKLEY, W. VA.—The Virginian Railway Co. will build a new power plant here.

CHICAGO.—The Belden Mfg. Co. is reported to have increased its capital.

CHICAGO.—A. M. Castle & Co., 1300 North Branch street, steel warehouse, will build a 3-story steel storage building costing $40,000.

CHICAGO.—The American Steam Motor Co., capitalized at $10,000, has been chartered by E. C. Jacobsen, David T. Tweddle and H. A. Moje.

CHICAGO.—The Rapid Machine Co., capitalized at $10,000, has been chartered by James Jeffery, Charles V. Clark and Stephen A. Cross.

CHICAGO.—The Wickert Valve Co., capitalized at $200,000, has been chartered in Delaware to manufacture valves by William Wickert, A. J. Roy and A. D. Crothers, all of Chicago.

CHICAGO.—The Commercial Mfg. & Pattern Works, capitalized at $10,000, has been chartered by John M. Justus, Theodore D. Justus and John G. Mitchell.

CHICAGO.—The Krasberg Engineering & Mfg. Corp. recently purchased a site, on which it plans to erect a 7-story plant. The company manufactures special machinery and tools.

CHICAGO.—The Apex Appliance Co., C. W. Swanson, president, manufacturer of washing machines, is building a 2-story factory addition, 58 x 81 feet, at 3241 West Thirtieth street, costing $20,000.

CHICAGO.—The Seng Co., manufacturers of hardware, has bought a site at Diversey and Crawford avenues, on which a plant will be built costing $400,000.

CHICAGO.—The Variety Mfg. Co., manufacturer of iron doors, has purchased a site for a new plant. No plans have been made as to when the structure will be erected.

CHICAGO.—Marshall Field & Co. will build a 1-story plant, 133 x 520 feet. The boiler plant will be in a separate building and the plant will be operated entirely by electric power used in individual motors.

DECATUR, ILL.—The Comet Automobile Co. contemplates the erection of a $35,000 heating and power plant.

EAST MOLINE, ILL.—Root & Van Dervoort Engineering Co. has acquired 61 acres as a future site for shop and foundry buildings.

GRANITE CITY, ILL.—The Howe Safety Appliance Co. recently increased its capital in Delaware, from $500,000 to $1,000,000.

MOLINE, ILL.—The H. A. Frank Foundry & Machine Co. reported to be planning erection of plant addition, 60 x 80 feet.

MOLINE, ILL.—The Moline Forging & Mfg. Co. is reported to having plans drawn for the erection of a heating plant, one story, 40 x 100 feet.

MOLINE, ILL.—The Universal Tractor Co., branch of the Moline Plow Co., 1420 Third avenue, is having plans prepared for a 2-story plant, 60 x 250 feet, to cost $250,000.

PEORIA, ILL.—The plant of O. H. Cloyd & Co., machinists, has been purchased by the Consumers' Oil Co., Council Bluffs, Iowa.

ROCKFORD, ILL.—The city of Rockford plans to erect a bridge costing $200,000. S. B. Hand is city engineer.

ROCK ISLAND, ILL.—The Moline Plow Co. is erecting a 1-story, 160 x 280-foot addition to its tractor plant.

ANDERSON, IND.—It is reported the Anderson Foundry & Machine Co. plans to increase its capital and also plans to expand its business.

FRANKFORT, IND.—The plant of the Model Machine Works, 260 East Clinton street, recently was damaged by fire.

YOUNGSTOWN, O.—W. M. McIntyre, former sales manager for the Sharon Steel Co., Sharon, Pa., plans to erect a large foundry here, opposite the plant of the Republic Iron & Steel Co. Details will be announced later.

Tools Bring Low Prices

THE combined sale of the machine tools and the mechanical equipment of the production department of the Marine Engineering Co., South Boston, Mass., and the war plant of the Excel Mfg. Co., Charlestown, Mass., Feb. 20, comprised 313 cataloged lots and aggregating about $25,000.

The principal prices realized were $1000, $837.50, $700, $625, $362.50 and $337.50 for universal and plain milling machines; $725, $507.50, $500, $287.50, $275, $237.50 and $230 for screw cutting engine lathes; $487.50, $412.50, $400, $387.50, $325 and $275 for crank shaping machines; $487.50, $375, $312.50, $300, $275 and $225 for universal and plain and disc grinding machines; $350, $312.50, $300, $230, $225 and $125 for multiple spindle and radial and upright drills; $625, $375, $250 and $212.50 for vertical die milling machines; $675 for iron planers; $400, $225 and $215 for presses and punches; $160, $145 and $125 for precision bench lathes, etc.

Business in Canada

VANCOUVER, B. C.—The Pacific Electric Welding & Mfg. Co., 50 Hastings street, plans to build a 1-story plant for the manufacture of electric welding equipment.

VANCOUVER, B. C.—The Mainland Engineering Co., 422 Railway street, is having plans prepared for a 2-story, 50 x 60-foot pattern shop, a 54 x 125-foot boiler and blacksmith shop, a 60 x 100-foot foundry, a 60 x 100-foot machine shop, marine ways, etc. Equipment will be needed.

LEASIDE, Ont.—Work has started on a forge shop for the Canadian Northern railroad, 1 Toronto street, Toronto. G. C. Briggs, 37 Wellington street east, is architect.

OTTAWA, ONT.—The Chats Falls Navigation Co., Ltd., has been incorporated to construct and operate vessels, with $50,000 capital, by Weldon J. Graham, L. G. Roy and others.

SARNIA, ONT.—The Aspromet Co. of Canada, Ltd., has been incorporated to make steel, machinery, etc., with $200,000 capital, by Harold H. Robertson, Sewickley, Pa., Charles McKenzie and Robert I. Towers, both of Sarnia.

TORONTO, ONT.—The Norton Tool & Machine Co., Ltd., has been incorporated to manufacture tools, etc., with $40,000 capital, by Reuben Norton, 92 Hogarth avenue, Alfred H. Chinn, 260 Pape avenue, and others.

TORONTO, ONT.—The Acme Electro-Plating Co., Ltd., has been incorporated to manufacture machinery, etc., with $40,000 capital, by Walter E. Lewis, 64 Richmond street east, James H. Bone, 171 Yonge street and Albert O. L. Burness.

TORONTO, ONT.—The Consolidated Stamping & Enameling, Ltd., has been incorporated to manufacture metal products, machinery, etc., with $500,000 capital, by Edwin G. Long, Bay and Melinda streets, Albert Mearns, 222 Gerard street east, and others.

TORONTO, ONT.—The National Electro-Products, Ltd., has been incorporated to manufacture metal products with $1,000,000 capital, by James L. Ross, 110 Havelock street, Arthur W. Holmsted, room 43, 20 King street east, and others.

MONTREAL, QUE.—Edward A. Robinson, Ltd., has been incorporated as mechanical engineer, manufacturer of engines, machinery, etc., with $50,000 capital, by E. Languedoc, Colville Sinclair and Ralph E. Allan.

MONTREAL, QUE.—The Montreal Forge & Shackle Co., Ltd., has been incorporated to manufacture chains, anchors, tackle, machinery, etc., with $20,000 capital, by Arthur W. P. Buchanan, Joseph C. B. Walsh and others of Montreal.

OUTREMONT, QUE.—The John J. Deery Co. will build an addition to cost about $6000.

ST. LOUIS DE CHAMPLAIN, Que.—The North Shore Power Co., Power building, Three Rivers, Que., plans the installation of an electric lighting plant at an estimated cost of $10,000. W. B. Baptist is manager.

ST. MALO, QUE.—The railway shops here will be put in operation, according to word received from D. B. Hanna, president of the Canadian National railway. It will take about six months to install machinery and equip the plant.

THREE RIVERS, Que.—The Canadian Pacific Railway Co., Montreal, will make improvements and extensions to shipyards here at a cost of $236,000. J. M. Woodman is general superintendent.

THREE RIVERS, Que.—The Tidewater Shipbuilders, Ltd., is having plans prepared for a dry-dock to cost $100,000 and pile work to cost $40,000.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ore

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.65
Mesabi Bessemer, 55 iron	6.40
Old range non-Bess., 51½ iron	6.90
Mesabi non-Bess., 51½ iron	6.75

Warehouse Prices

Steel bars, Chicago	3.97c
Steel bars, Cleveland	3.87c to 4.00c
Steel bars, Detroit	3.93c
Steel bars, Philadelphia	3.95c
Steel bars, New York	3.97c
Steel bars, St. Louis	4.04c
Steel bars, Cincinnati	3.93c
Steel bars, St. Paul	4.195c
Steel bars, Buffalo	3.915c
Iron bars, Buffalo	4.70c
Iron bars, Chicago	4.77c
Iron bars, Detroit	3.93c
Iron bars, St. Louis	4.04c
Iron bars, Cincinnati	3.93c
Iron bars, Philadelphia	4.30c
Iron bars, New York	4.57c
Shapes, Chicago	4.07c
Shapes, Detroit	4.03c
Shapes, St. Louis	4.14c
Shapes, St. Paul	4.295c
Shapes, New York	4.07c
Shapes, Cleveland	4.00c
Shapes, Philadelphia	4.05c
Shapes, Buffalo	4.015c
Shapes, Cincinnati	4.03c
Plates, Buffalo	4.215c
Plates, Chicago	4.27c
Plates, Detroit	4.23c
Plates, St. Louis	4.34c
Plates, St. Paul	4.495c
Plates, New York	4.27c
Plates, Cleveland	4.17c
Plates, Philadelphia	4.25c
Plates, Cincinnati	4.23c
No. 10 blue anl. sheets, Chicago	5.17c
No. 10 blue anl. sheets, Cleveland	5.00c
No. 10 blue anl., Buffalo	5.165c
No. 10 blue anl. sheets, St. L...	5.24c
No. 10 blue anl. sheets, Cincinnati	5.13c
No. 10 blue anl. sheets, St. Paul	5.395c
No. 10 blue anl. sheets, Detroit	5.13c
No. 28 black sheets, Chicago	6.22c
No. 28 black sheets, Cleveland	6.00c
No. 28 black sheets, Cincinnati	6.28c
No. 28 black, Detroit	6.28c
No. 28 black sheets, St. L...	6.29c
No. 28 black sheets, St. Paul...	6.445c
No. 28 black Buffalo	6.165c
No. 28 galv. sheets, Chicago	7.57c
No. 28 galv. sheets, Cleveland	7.25c
No. 28 galv. sheets, Cincinnati	7.53c
No. 28 galvanized, Detroit	7.53c
No. 28 galv. sheets, St. L...	7.64c
No. 28 galv. sheets, Buffalo	7.515c

Iron and Steel Scrap

(Prices in Gross Tons)

STEEL WORKS USE

Bundled sheets, Cincinnati	$ 9.00 to 9.50
Bundled sheets, Pittsburgh	11.00 to 12.00
Bundled sheets, Cleveland	9.00 to 10.00
Bundled sheets, Buffalo	11.50 to 12.00
Boiler plate, cut, No. 1, Chicago	10.00 to 11.00
Boiler plate, cut, No. 1, St. Louis	10.00 to 10.50
Frogs, switches, guards, St. Louis	14.00 to 14.50
Frogs, switches, guards, Chicago	14.50 to 15.00
Heavy melting steel, Pittsburgh	15.00 to 15.50
Heavy melting steel, Buffalo	12.00
Heavy melting steel, Chicago	14.50 to 15.00
Heavy melting steel, Cleveland	14.50 to 15.00
Heavy melting steel, Cincinnati	14.00 to 14.50
Heavy melting steel, east. Pa.	14.00 to 15.00
Heavy melting steel, N. Y. (Deal.)	11.00 to 12.00
Heavy melting steel, St. L.	13.75 to 14.25
Heavy melting steel, Birmingham	12.00 to 13.00
Baled sheets, Cleveland	13.50 to 14.00
Baled sheets, Pittsburgh	13.00 to 13.50
Baled sheets, Chicago	11.50 to 12.00
Knuckles, couplers, Chicago	16.50 to 17.00
Knuckles, couplers, St. Louis	14.50 to 15.00
Low phos. steel, Buffalo	19.00 to 20.00
Low phos. steel, Pittsburgh	23.00 to 24.00
Low phos. crops, eastern Pa.	20.00
Low phos. guaranteed E. Pa.	20.00
Shoveling steel, Chicago	14.00 to 15.00
Shoveling steel, St. Louis	13.50 to 14.00
Steel rails, short, Cleveland	17.50 to 18.00
Steel rails, short, Chicago	16.50 to 17.00
Steel rails, short, St. Louis	14.00 to 14.50
Steel rails, old, Birmingham	12.00 to 13.00
Stove plate, Chicago	17.75 to 18.25
Stove plate, Cincinnati	12.00 to 12.50
Stove plate, St. Louis	15.00 to 15.50
Stove plate, N. J. pts...(Dealers')	17.50 to 18.00
Stove plate, Birmingham	13.50 to 15.00
Stove plate, Buffalo	17.00 to 18.00
Stove plate, eastern Pa.	18.00 to 20.00
Stove plate, Cleveland	16.00 to 17.00
Stove plate, Pittsburgh	15.00 to 16.00

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:

Cleveland	$1.40
Newark, N. J.	6.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$3.00
Cincinnati	2.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.00
Indianapolis	2.50
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

IRON MILL USE

Busheling, No. 1, Cleveland	14.00 to 14.50
Busheling, No. 1, Buffalo	13.00 to 14.00
Busheling, No. 1, Pittsburgh	15.00 to 15.50
Busheling, No. 1, Cincinnati	14.50 to 15.00
Busheling, No. 1, Chicago	14.50 to 15.00
Busheling, No. 2, Chicago	11.00 to 12.00
Busheling No. 1, St. Louis	14.50 to 15.00
Cast borings, New York (Dealers')	10.00
Cast borings, eastern Pa.	13.00 to 14.00
Cast borings, Buffalo	9.00 to 10.00
Cast borings, Cleveland	10.00 to 10.50
Cast borings, Cincinnati	7.50 to 8.00
Cast borings, Pittsburgh	10.50 to 11.00
Cast borings, Birmingham	6.50 to 7.50
Cast borings, Chicago	7.00 to 8.00
Cast borings, St. Louis	6.00 to 6.50
City wrought, long N. Y. (Deal'r)	15.00 to 16.00
Cut forge, Chicago	15.50 to 16.00
Forge No. 1, eastern Pa.	13.50 to 14.50
Forge flashings, large, Cleveland	8.50 to 9.00
Forge flashings, small, Cleveland	12.75 to 13.25
Grate bars, Buffalo	21.00 to 22.00
Grate bars, Cleveland	16.00 to 17.00
Grate bars, N. J. pts...(Dealers)	17.50 to 18.00
Iron axles, Pittsburgh	26.00 to 27.00
Iron axles, Cincinnati	22.50 to 23.00
Iron axles, Cleveland	25.00 to 26.00
Iron axles, Chicago	33.00 to 34.00
Iron axles, eastern Pa.	nominal
Iron axles, St. Louis	24.00 to 24.50
Iron axles, Buffalo	23.00 to 24.00
Iron rails, Chicago	20.00 to 20.50
Iron rails, Buffalo	21.00 to 22.00
Iron rails, Cincinnati	21.00 to 22.00
Iron rails, St. Louis	20.00 to 20.50
Iron rails, Cleveland	23.00 to 24.00
Machine turnings, Cincinnati	7.50 to 8.00
Machine turnings, Cleveland	7.25 to 7.75
Machine turnings, Buffalo	8.00 to 10.00
Machine turnings, N. Y. (Dealers')	8.00
Machine turnings, Pittsburgh	9.00 to 10.00
Machine turnings, east. Pa.	11.00 to 12.00
Machine turnings, Birmingham	6.50 to 7.50
Machine turnings, Chicago	7.00 to 7.50
Machine shop turnings, St. Louis	5.00 to 5.50
Pipes and flues, Cleveland	10.75 to 11.25
Pipes and flues, Chicago	12.50 to 13.00
Pipes and flues, St. Louis	11.50 to 12.00
R. R. mach. cast, No. 1, Buffalo	21.00 to 22.00
R. R. wgt. No. 1, Buffalo	27.00 to 28.00
R. R. wrgt. No. 1, east. Pa.	21.00 to 22.00
Railroad wrgt., No. 1, Cincinnati	18.00 to 18.50
Railroad wrgt., No. 1, Cleveland	16.00 to 17.00
R. R. wrought, No. 1, Pittsburgh	17.00 to 18.00
Railroad wrgt., No. 2, Chicago	15.50 to 16.00
Railroad wrought, No. 1, Chicago	17.50 to 18.00
R. R. wrought, No. 1, Birmingham	12.00 to 13.00
No. 1 yard wrought, eastern Pa.	18.00 to 19.00
No. 1 busheling wrgt., east. Pa.	16.00 to 17.00
Sheet bar crops, Pittsburgh	18.00 to 19.00
Railroad wrgt., No. 1, St. Louis	15.00 to 15.50
Railroad wgt., No. 2, St. Louis	13.50 to 14.00
Wrought pipe, Buffalo	13.00 to 14.00
Wrought pipe, east. Pa.	16.50 to 17.50
Wrought pipe, ungraded, east. Pa.	12.00 to 13.00

IRON OR STEEL WORKS USE

Axle turnings, Cleveland	$12.25 to 12.75
Axle turnings, Buffalo	13.00 to 14.00
Heavy axle turnings, east. Pa.	12.00 to 13.00
Heavy axle turnings, Pitts.	12.50 to 13.50
Shafting, New York (Dealers')	19.00 to 20.00
Shafting, east. Pa.	23.00 to 25.00
Shafting, St. Louis	17.00 to 17.50
Steel car axles, Birmingham	18.00 to 20.00
Steel car axles, Pittsburgh	25.00 to 26.00
Steel car axles, N. Y. (Dealers')	22.00 to 23.00
Steel car axles, Buffalo	23.00 to 24.00
Steel car axles, Cleveland	25.00 to 26.00
Steel car axles, East. Pa.	nominal
Steel car axles, Chicago	22.50 to 23.00
Steel car axles, St. Louis	21.00 to 21.50

IRON FOUNDRY USE

Car wheels (iron), Pittsburgh	21.00 to 22.00
Car wheels (steel), Pittsburgh	17.00 to 18.00
Car wheels, East. Pa.	22.00 to 23.00
Car wheels, Buffalo	21.00 to 22.00
Car wheels, Chicago	20.00 to 21.00
Car wheels, St. Louis	20.50 to 21.00
Car wheels, Birmingham	12.00 to 13.00
Car wheels, Cleveland	18.00 to 18.50
Tram car wheels, Birmingham	17.00 to 19.50
Cast, No. 1, Birmingham	18.00 to 20.00
Cast, No. 1, cupola, east. Pa.	22.00 to 23.00
Cast, No. 1, Cleveland	20.50 to 21.50
Cast, No. 1, Cincinnati	18.00 to 18.50
Cast, 1, machy., N. Y. (Dealers')	20.00 to 21.00
Cast, 1, heavy, N. Y. (Dealers')	19.00 to 20.00
Cast, No. 1, Chicago	22.25 to 23.25
Cast, No. 1, Pittsburgh	21.00 to 22.00
Cast, No. 1, St. Louis R. R.	20.50 to 21.50
Malleable, Cincinnati	15.00 to 15.50
Malleable, Cleveland	15.00 to 15.50
Malleable, Buffalo	10.00 to 20.00
Malleable, Pittsburgh	13.00 to 15.00
Malleable, East. Pa.	nominal
Malleable, cupola, East. Pa.	nominal
Malleable, railroad, Chicago	17.50 to 18.00
Malleable, agricultural, Chicago	16.00 to 16.50
Malleable, railroad, St. Louis	12.75 to 13.50
Malleable, agricultural, St. Louis	11.00 to 11.50

MISCELLANEOUS USES

Boiler punchings, Chicago	19.00 to 20.00
Reroll. rails, 5 ft. and over, Pitts.	17.00 to 18.00
Reroll. rails, 5 ft. and over, Chi.	16.50 to 17.00
Reroll. rails, 5 ft. and over, E. Pa.	16.50 to 17.50
Reroll. rails, 5 ft. and over, St. L.	14.00 to 14.50
Reroll. rails, 5 ft. or over, Cleve.	14.50 to 15.00
Rerolling rails, long, Birmingham	37.50 to 38.50
Locomotive tires, Chicago	17.00 to 18.00
Locomotive tires, St. Louis	14.00 to 14.50